

The Electragist

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Association of Electragists
INTERNATIONAL

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A Proven Mark of Merit

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From Raw Pipe to Finished Conduit

In every step in the many operations of producing
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the one invariable desire is **QUALITY!**

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Electrical Construction Second Line Defense of Electrical Salesmanship

The salesman gets the customer but the construction man is charged with the job of holding him. He also must back up the low bid and try to find a way of doing the job more efficiently. Success comes to the contractor when the sales department knows it can depend on the construction division to come through at all times

By R. A. GOELLER

Vice President, Hatzel & Buehler, Inc., New York City

"DON'T ask me. Ask the consulting engineer who made the layout and who gave you your contract" roared the chief engineer of a large manufacturing plant to the electrical contractor's superintendent who in going over a proposed power feeder path with his foreman had diplomatically, so he thought, invited the chief to go along with them so that interferences of aggravating and costly nature could be avoided both then and in the future. It was a tense moment and many things hinged on what was said in reply.

The contractor's sales engineer had long sought the opportunity to negotiate a contract through these particular consulting engineers and to assure closing this contract had offered a very attractive proposition, on the assumption that the establishment of a connection and opportunities of further business would be well worth while. Also the extent of the particular plant held out great possibilities from that angle.

The Right Reply

How important it is that the construction force should understand the salesman's problems. The extensive work about the plant that the sales engineer had foreseen could only be had through the cooperation of the chief engineer. The wrong reply in this case would have utterly killed future business. But should the construction force have some understanding of the selling problem they would most likely answer along these lines—"It was our idea to please you in both the planning as well as the actual execution of the work and being anxious that your future plans be considered, interferences avoided and if possible to incorporate any suggestions

you may have regarding the installation." Such an answer was in this particular case effective and not especially hard to make for personal feelings that might otherwise have been easily injured were fortified by a larger understanding of the problems at hand.

Working With the Owners

It was several years after the above mentioned incident that the final contract was completed, yet during that time considerable work was executed direct with the owners through their chief engineer and at the same time as contracts were being executed through the consulting engineer.

The construction force becomes a potent factor usually after the contract is signed and physical work commences. Yet its operations on previous work may have laid down a basis of service and labor costs that were initially helpful in closing the contract at hand.

Competition is a tremendous factor in electrical contracting and the selling of contracts is based on price. Even among the most intimate friends the selling price is not usually determined by any trust that the purchaser may have in the seller, but by the figure set up by the electrical construction market in open competition. Faced almost invariably with a story of a low figure on new contracts there is small wonder that the construction force, not knowing facts in detail, often takes a scoffing attitude which says as plain as words "Tell us a new one; we heard that old chestnut before." Yet in most cases it is the truth and its telling is varied only by the details of each individual case.

Cooperation

Let us assume that the selling con-

nections are strong enough to permit taking the job, not at a preference you understand, but at a figure slightly below the low bid. What then should be the attitude of the construction department? The sales engineer already sees possible economies in interpreting the electrical layout in terms of occupancy requirements as well as electrical facilities not yet provided for. It is logical to presume that the construction department will rise to the occasion by hearty cooperation so that the new contract will be launched with an enthusiasm communicated at once to the foreman, for the possibilities of new work always stir the vivid imagination of the electrical contractor.

The Foreman's Part

From the moment your foreman leaves your shop fully informed beforehand by the object to be attained, and arrives on the job he becomes a potential factor in your selling campaign. His introduction to the general superintendent, architect or engineers' representative should be strongly indicative of service, cooperation and courtesy. Perhaps he meets the foremen of other trades and if he is wise he will endeavor to come to a quick mutual understanding regarding their respective work, thus saving the architect or engineers embarrassment on extras which cannot easily be justified and for which his client receives no benefit.

With the work under way his contact with the job details give him many opportunities to contribute to the selling plan. It may be a room inadequately served by existing outlets, or perhaps the client's representative has been over the job and the combination of courtesy

and conversation has brought out the fact that certain occupancy requirements have not been taken care of electrically as yet, or it may be an idea that will overcome some problem of reaching a certain point which had been causing much worry due to expense, extensive cutting and decoration. Ideas and suggestions culled from the field and placed in the hands of the sales engineers became potential prospects for new business and a factor in selling one company's idea to the client.

The greatest aid that the construction force can give to the sales force on arriving at costs for additional work is a complete analysis of the work, contributing every suggestion for the elimination of expense through the use of short cuts, etc., for it is on extra work compensation that most ill will is created between the client or his representative and the contractor, oftentimes destroying invaluable good will which perhaps had required years to build up.

Cost records, properly obtained are of vital interest in selling new contracts and the construction force can through them make a contribution of unquestioned importance. Even though the selling force in strong competition goes under these figures the progressive construction man will be ready to meet the challenge. By intensive study in the planning of the work, creation of efficient construction gangs and the use of modern labor saving tools he will meet and sometimes go the estimated units one better.

The sales force is ever in the vanguard striving for new business and while they stand up in the front line battling sometimes against long odds it must be a great source of satisfaction and inspiration to know that the construction force is a strong second line of defense upon which they can call. How well they have risen to the occasion, you have but to ask any successful electragist and he will tell you with a glow of pride the accomplishment of his "Boys."

There are of course other very important factors necessary for success in electrical contracting but our story has to do particularly with the relationship of the construction force to the sales department and once the proper understanding is established between the two a long stride forward is made toward success—and profit.

New Yorkers Hear Estimating Talk

At the regular monthly meeting of the Independent Associated Electrical Contractor-Dealers of New York, held on February 11, Arthur L. Abbott, technical director of the A. E. I., talked on the subject of estimating small jobs of exposed work.

While there is a very large amount of this class of work done in New York City, little attention has been given to the development of practical methods of estimating costs, with the result that many of the smaller contractors estimate on the "per outlet" basis or in some cases merely guess at the cost.

Mr. Abbott strongly urged the making of all estimates for this work on the "unit price" basis, that is, by listing all material and figuring the cost of each item and applying labor units to certain items in such a manner as to account for all the labor required. The accompanying data was presented and

its use was explained by showing three complete estimates on the blackboard.

It was shown that a typical job of rewiring on one floor of a loft, done with armored cable run exposed, required that labor be figured on four items—cables, outlet boxes, drop cords and cabinet. Five items cover all the labor on conduit, outlet boxes, wire, drop cords and cabinet.

For a typical job of extensions from existing outlet done with metal molding in a fireproof building, labor is figured on six items, feet of molding, outlets, elbows, tees, connections to old outlets and drop cords.

For each of these jobs a list of material can easily be made up from a rough free-hand sketch of the layout when the principal dimensions of the space are known. Material costs can then be figured quickly and it is a very simple matter to estimate.

STANDARD TIMES FOR EXPOSED WORK, INCLUDING FASTENINGS

Applying to small rewiring jobs in old buildings, and extensions from existing outlets.

				Hours and Cost per 100 at \$1.10 per hr.		
				Installed on		
				Wood	Tile or Cinder Concrete	Brick
Rigid Conduit— $\frac{1}{2}$ in.,	per 100 ft.	Hours	Cost	2.25 \$ 2.48	2.95 \$ 3.25	2.52 \$ 2.77
Rigid Conduit— $\frac{3}{4}$ in.	per 100 ft.	Hours	Cost	2.65 \$ 2.92	3.35 \$ 3.69	2.92 \$ 3.21
Outlet Boxes for rigid conduit		Hours	Cost	52 \$57.20	57 \$62.70	60 \$66.00
No. 14 single wire	per 100 ft.	Hours	Cost	.60 \$.66	.60 \$.66	.60 \$.66
Armored Cable	per 100 ft.	Hours	Cost	3.21 \$ 3.53	5.55 \$ 6.10	4.07 \$ 4.48
Outlet Boxes for Cable		Hours	Cost	33 \$36.30	38 \$41.80	41 \$45.10
Metal Molding including wire	per 100 ft.	Hours	Cost	4.36 \$ 4.80	5.36 \$ 5.90	6.08 \$ 6.70
Outlet Boxes for molding—surface type		Hours	Cost	31 \$34.10	36 \$39.60	39 \$42.90
Molding Els		Hours	Cost	16 \$17.60	17.50 \$19.25	18.40 \$20.24
Molding Tees		Hours	Cost	60 \$66.00	62 \$68.20	63 \$69.30
Molding-connection to existing outlets		Hours	Cost	51 \$56.10	51 \$56.10	51 \$56.10
Drop Cord—molding—No. 348 Rosette		Hours	Cost	44 \$48.40	44 \$48.40	44 \$48.40
Drop Cord—rigid or BX—soldered		Hours	Cost	53 \$58.30	53 \$58.30	53 \$58.30

Data for metal molding applies to National Metal Molding Co.'s No. 333 molding.

This table is based on the following specifications for fastenings:

Rigid Conduit—14 pipe straps per 100 ft.

Armored Cable—45 pipe straps per 100 ft.

Pipe straps fastened with 2 No. 8— $1\frac{1}{2}$ in. wood screws each on wood, 2 No. 8— $1\frac{1}{2}$ in. wood screws and Rawlplugs each on tile or cinder concrete, 1 No. 8— $1\frac{1}{2}$ wood screw and Rawlplug each on brick.

Metal Molding—40 fastenings per 100 ft., No. 8— $1\frac{1}{2}$ in. wood screws on wood, No. 8— $1\frac{1}{2}$ in. wood screws and Rawlplugs on tile, cinder concrete or brick.

All outlet boxes—2 wood screws on wood, 2 screws and Rawlplugs on tile, cinder concrete or brick.

Methods Employed by Various Contractors to Keep Track of Tools

THERE often is considerable loss of tools on electrical contracting jobs, due sometimes to theft by workmen of other trades, sometimes to carelessness on the part of the wiring crew, sometimes to breakage, etc. It is not always possible to charge off these losses against the particular job on which they occur and even when that can be done it is not always satisfactory since the loss represents waste.

The Electragist has had numerous requests for information on how to prevent loss of tools, by which it has been led to query its readers on the systems they are using.

It was surprising to learn how many firms make no special provision for taking care of tools that are sent out on jobs. There are a number, however, who have worked out good systems and some of these are outlined and explained below.

Uses Distinctive Colors, Numbers and Tool Book

C. L. Chamblin, Manager, California Electrical Construction Company, San Francisco, California

The loss of tools is one of the real problems of contracting. We have tried many systems, and while none seems to be fool-proof, our present system has worked out the best.

The stock clerk has a tool book, and charges to the job each tool that is sent out to the job. The ladders are numbered and are charged by number. All tools and ladders are painted red and white, the company name or initials in white as well as ladder numbers. Until tools are credited in, we at least know where they went, and when stolen they can be charged to the cost of the job, if desired, or charged off on tool account.

Stamped With Initials and Numbered

J. F. Buchanan, J. F. Buchanan & Company, Philadelphia, Pa.

We have always made an attempt to keep track of tools and have never been very successful. However, at the present time, we are stamping a number on each one. We are charging to the man a tool with that number on and when they are returned, a credit is given him for that particular number. We have found that with the numbers on it is easier to locate the tool when a foreman tells us

that he gave the tool he had to another foreman. This can be checked by the serial number.

Has Regular Tool Charge Slip

Barber Electric & Contracting Company, Houston, Texas

The accompanying forms, one for tools taken from the shop and the other for tools returned to the shop are made out in duplicate whenever tools are

TOOLS TAKEN FROM SHOP	
No. _____	_____ 192_
For Job _____	

TOOLS RETURNED TO SHOP	
No. _____	_____ 192_
For Job _____	

These Two Forms Are Made Out in Duplicate

moved. The forms bear the job name for quick identification. The company, through an officer, states that all tools have to be accounted for—even worn out ones.

"It is very easy," they say, "if you keep behind it."

Create Proper Spirit Among Men

G. E. Shepherd, Shepherd-Rust Electric Co., Wilkes-Barre, Pa.

We have handled tools under several different systems, none of them being completely satisfactory. Our present arrangement is that all tools taken from the supply room shall be requisitioned the same as wiring materials and a charge made in a similar manner. All materials and tools therefore are charged directly to the job. Before these sheets go into the office they are checked by the clerk who handles the material and tools and a separate memorandum of the tools is forwarded to the office where a record of same is kept in a separate book.

On completion of the work, or when all materials are supposed to have been returned, a check is made and all tools accounted for.

The system of holding the foreman responsible for the tools does not work out for the reason that while it is satisfactory on a large operation it falls down on a multitude of small jobs where it not infrequently happens that the man acting as foreman is withdrawn from the job before its completion. This means a divided responsibility.

On a large operation the keeping track of tools is simplified since the work is handled on a more definite basis and one man is responsible for the entire job. In fact, it is our belief that the existence of this problem of keeping track of tools is due almost entirely to the fact that the business conducted by a great majority of electrical men is small, and in a small business lies the difficulty of keeping track of tools. While this may seem a paradox we believe the explanation lies in the fact that a small business cannot afford the extra expense that would be introduced by creating a number of separate departments including one for tools, whereas with a larger business a separate department is usually given over to the control of one man who handles tools and equipment. In this way it is possible to keep accurate records and check up closely. Because of this we

Tools Colored and Numbered

James A. Atwood, Dayton, Ohio

We have each tool numbered and charge them out to the individual and to the job. Tools are checked in the same as material, each tool being numbered. In this way we are able to keep track of our tools. We also have our tools painted a special color so that we can identify them on the jobs. Our ladders, tools and all equipment have this mark and where the tools are large enough our name is also printed on them.

A Proven Method for Keeping Track of Tools

A. M. Cover, Manager, Iron City Engineering Company, Pittsburgh, Pa.

As every contractor knows, it is impossible to prevent the loss of tools, both by his employees and from theft; but by the use of a system which has proven very satisfactory with us, and which will be described the lost tools can be detected and charged direct to the job on which the loss occurred, without carrying them over to the end of the year.

The following outline will explain this system, which is inexpensive.

FIRST—To use the system it is necessary to obtain a card file, blank main section guides, sub-division guides and a number of blank cards.

SECOND—Divide the file in two sections: Stock and job.

Stock Section—This represents tools in the warehouse or shop. Sub-divide this section in alphabetic form as follows:

A, B, C, D, E, F; G; etc.

and in addition to this alphabetic sub-divisions add a number of sub-divisions such as

Tool Boxes
Padlocks
Portable Benches
Beaver Stock
Crown Stocks
Chain Wrenches
Etc.

Job Section—This represents tools on jobs.

Sub-divide this section with a sub-division for each job as for instance:

John Doe, Residence, Job No. 402.
John Doe, Store, Job No. 532.
John Doe, Garage, Job No. 580.
Etc.

THIRD—After the file is prepared, make an accurate stock list of *each tool*

in the warehouse and on the jobs, and have an individual card, made out for *each* tool or piece of apparatus you wish to keep track of, and place the card in the correct sub-division of the file.

By referring to John Doe Residence, Job No. 402, or any sub-division you can quickly ascertain what tools are on that particular job, or in the warehouse, as the case may be.

The diagram shows a card file with a card labeled 'D' and 'John Doe Job #402'. The card contains the following information:

1 Portable Bench.
JOS. Woodwell Co.
\$7.50
12-31-1924

The Equipment for the Card File

The diagram shows a transfer sheet titled "TRANSFER OF MATERIAL AND TOOLS" from "Iron City Engineering Company". It includes a table with columns for Quantity, Description, and Remarks. The table lists the following items:

Quantity	Description	Remarks
50	#0 1 1/2 galv boxes	
100	ft 1/2" conduit	
1	Portable Bench	

The sheet is dated Jan 13, 1925, and signed by J. M. Cover.

A Transfer Sheet Such as Is Used to Operate the File

FOURTH—To operate the file we use a transfer sheet, as illustrated. These sheets are made out in triplicate by the superintendent as a requisition on the warehouse, and by the warehouse as a receipt for tools, etc., returned to stock.

FIFTH—The file should be left in the office, but may be kept at the warehouse. We prefer the office. The clerk in charge of the file takes the transfer sheets and transfers the card representing each tool from one sub-division of the card file to another. He then checks the tool items he has transferred on the transfer sheet. The transfer sheets are filed as part of another system.

SIXTH—A new card is made out for each tool, when purchased, and is at once placed in the correct subdivision

of the file. This card contains the date, cost of tool, number and description.

SEVENTH—When a job is completed and the tools returned to the warehouse or transferred to other jobs, the subdivision of the file representing the job is removed and destroyed. If any tool cards remain in the subdivision, it means those tools are lost. The tools which they represent are then charged as part of the cost of the job.

At least once a year the tools in the warehouse and on each job should be checked with the cards in the file.

Furnishes Lockers

Abry S. Cahn, Cahn Electric Co., Shreveport, La.

We have minimized our losses by arranging lockers whereby men could properly take care of their tools in the shop, and furnishing them with locked tool boxes for the larger jobs.

We have furnished each man with a complete set of stocks and dies, etc., that it is customary for the shop to furnish. These tools are actually charged to him. If he misplaces a tool, the tool that is furnished him to replace the shortage is charged to him. The first charge is held on a memorandum charge, but all replacements are actually taken out of his pay. At such time that this man leaves our employment the tools are checked in and credited to his account. If there is any shortage same is taken out of his pay.

Actually Makes Men Pay for Lost Tools

D. W. Shafer, The Central Electric Co., Wichita, Kansas

We have found the only way we can keep track of our shop tools is to charge them to the mechanic that gets them and make him responsible for the returning of same to our stock room.

This means that we actually make the men pay for lost tools.

We find that we seldom have to make the men pay.

The men present arguments at times that are very good and frequently we do not charge them but we find this the best rule we can work from to make them be careful. We hold meetings from time to time with the men and argue the best plan for different things. We find from their arguments that they rather pay for a lost shop tool once in a while in preference to each man furnishing all his tools.

Syracuse Brings Out Red Seal Specifications

TO Syracuse, New York, goes the honor of preparing the first Red Seal specifications to meet with the approval of the Society for Electrical Development, the national sponsor. Detroit and Pittsburgh specifications are under consideration, there still being some minor matters to be adjusted.

The Syracuse specifications will be officially launched on March 24th at a general meeting to which will be invited all local building contractors, architects and engineers. At this time the meaning

and use of the Red Seal will be explained and the building industry will learn how a Red Seal job may be specified and secured.

Already building contractors who have heard about the Red Seal plan in an informal way have shown interest. That the local electrical industry will have a standard plan, will inspect the job and certify it, has a great appeal to these men.

The Syracuse Electric League, Inc., is promoting the Red Seal plan in Syra-

cuse and it was a committee of that organization which drew up the specifications as now approved. That committee consists of:

E. W. Kendall, Sales Manager, Pass & Seymour, Chairman; W. P. Vaughan, Chief Electrical Inspector; Prof. R. D. Whitney, Chief of the Department of Water, Gas & Electricity; L. L. Cross, Syracuse Lighting Company; Jacob Heil of Crouse & Heil, Electrical Contractors; H. N. Smith, Manager.

For months this committee worked on a suitable set of specifications and the result is illustrated on this page. The sheet is letterhead size with three folds. On the inside are the specifications, as shown. On the outside, when folded, it will state that it is the "Red Seal Plan Requirements for wiring the Home for Convenient Electric Service."

In the specifications it will be noticed that the League will inspect to see that a Red Seal job has been performed, that is, an adequate number of outlets and circuits. This inspection in no way conflicts with the underwriters' inspectors. In fact, the latter must be made and work approved before a Red Seal certificate can be issued.

Attention is also called to the fact that these are minimum requirements.

The specifications call for due allowances for future additional load and the case of the dining room and the laundry and kitchen special branch circuits with No. 12 wire are called for.

These specifications undoubtedly were made with certain standard room sizes in mind for at the left it will be noticed there are amplifying remarks to the effect that the number of outlets is determined by the square feet of wall space. The unit of wall space that governs the number of outlets is 15 feet.

There are also certain exceptions to these specifications to take care of certain types of construction which render such additional outlets unnecessary.

It is apparent in looking over the specifications that what the Syracuse committee had in mind was a reasonably adequate job and not an ultra expansive job.

SYRACUSE ELECTRIC LEAGUE, INC.

MINIMUM REQUIREMENTS FOR RED SEAL INSTALLATION

GENERAL

As a service to home owners of Syracuse and vicinity the following requirements for an adequately wired home have been prepared by the Syracuse Electric League, Inc., and approved by The Society for Electrical Development. These requirements are considered as a reasonable minimum standard and are based on knowledge and study of present-day electrical service and appliances which should be available in the average home.

A copyrighted Red Seal and Red Seal certificate will be awarded only to residence buildings wired in accordance with these requirements and will serve the public as identification of buildings so wired.

Wiring plans should be submitted to the Syracuse Electric League for approval before wiring is started. Before permanent Red Seal and Certificate will be issued, opportunity must be given for inspection of finished installation by League representative. Also, the entire electrical equipment must be installed in accordance with the National Electrical Code Rules, City or Village Ordinances and lighting company's rules and must be inspected and approved by the inspection department having jurisdiction.



SPECIAL

SWITCHES—All switches shall be of the flush type conveniently located and where two or more are brought to the same location they must be grouped under a single plate.

CONVENIENCE OUTLETS—All Convenience outlets shall be complete with receptacles of the flush interchangeable type conveniently located with respect to furniture spaces. Unless otherwise stated in requirements, multiple receptacles under one plate will be counted as one outlet.

RANGES—If ranges are to be included, the full 70 ampere capacity must be carried to each range outlet.

BRANCH CIRCUITS—Two special branch circuits of No. 12 wire shall be provided, one for the convenience outlets in the dining room and breakfast room and the other for the convenience outlets in the laundry and kitchen. Provision for addition of at least one future circuit for each family shall be made by spare fused terminals in distribution panel or cabinet.

	Ampere		Outlets		Switches
	One Family	Each Additional Family	Ceiling	Bracket	
SERVICE	50	40	70		
PORCHES & Main Ent.—Each Ent. if 15' apart					
VESTIBULE or ENTRYWAY			1	1	1
HALLS *1			1	1	1
STAIRS (All)			1	1	2
LANDINGS—Of over 40 Sq. Ft.			1	1	1
ROOMS—Reception Hall			1	1	1
Living			1	1	1
Library			1	1	1
Conservatory			1	1	1
Den			1	1	1
Sun			1	1	1
Dining			1	1	1
Kitchen			1	1	1
Sleeping			1	1	1
*2 Breakfast Room or Nook			1	1	1
Pantry			1	1	1
Bath			2	1	1
Lavatories			1	1	1
Mantels			1	2	
Closets, etc., over 8 Sq. Ft.			1	1	
ATTICS—General Lighting			1	1	1
Each Enclosed space			1	1	
CELLARS—Each Enclosed space			1	1	
*3 Each Furnace			1	1	
Each Coal Bin			1	1	
General Lighting			1	2	
LAUNDRY			1	1	1
GARAGES—Built-in			1	1	1

BELLS—Wiring for a push button for each outside door and corresponding bells or annunciator. Provision shall be made for the attachment of transformer or batteries.

EXCEPTIONS. *1—Halls less than 15 ft. in length may be controlled by one-way switches. Where hall at head of stairs is not more than 10 ft. in length and outlet is so located that it will properly light the entire length of both hall and stairs one outlet may serve for both purposes.

*2—If breakfast nook is properly lighted without a separate outlet, both switch and light outlet may be omitted. In Breakfast Room or Nook the convenience outlets may be combined under one plate.

*3—If light in front of furnace would properly light coal bin, the one outlet may serve the double purpose.

A Criticism of Free Delivery on Motor Repairs

By RUEL McDANIEL

"THE one big thing we don't do," emphasized F. C. Michael, "is to call for motor repair work—any kind of electrical repair work for that matter—and then deliver it, free, after it is finished."

Mr. Michael is president of the Michael & Bivens Company, Gastonia, North Carolina, a concern that has, since its incorporation in 1913, built up an electrical business that touches the half-million mark. The company has two stores in Gastonia and one in Greensboro; and its growth is remarkable for a business established in a town no larger than Gastonia.

Naturally there are some interesting reasons back of this growth; and Mr. Michael was leading out on some of these when he made the foregoing assertion regarding free delivery service.

The company's business is largely with industrial plants, and of these the vast majority is cotton mills. It was special reference to this class of business that brought Mr. Michael's statement.

"A contractor who is willing to go to the plants, pick up the jobs, repair them on a rush order and deliver them free," he said, "is hurting himself in the long run. If he does the work properly and does not charge enough extra to cover this delivery and pickup cost, then he is losing money; if he slights his work in order to make up for the extra cost, then he is ruining his reputation for good workmanship.

"We do business in four states—North Carolina, South Carolina, Virginia and Tennessee—and we run into considerable competition in the way of this delivery service. We naturally could not think of calling for and delivering a job for one of our distant customers; and it would not be fair to these if we were to give the service free to those nearer by. We do not make free pickups and deliveries even in Gastonia, and we are convinced that we would only hurt ourselves in the long run if we started it.



The Main Shop in Gastonia Through Which Goes Most of Half-Million Dollar Annual Business of the Michael & Bivens Company

"You can count on the big factories taking advantage of your service if you start it, for competition for their patronage is so keen that they are continually being solicited. We are meeting this free delivery evil—we think it is an evil to all concerned—by trying to put a little more service of a different nature back of our jobs."

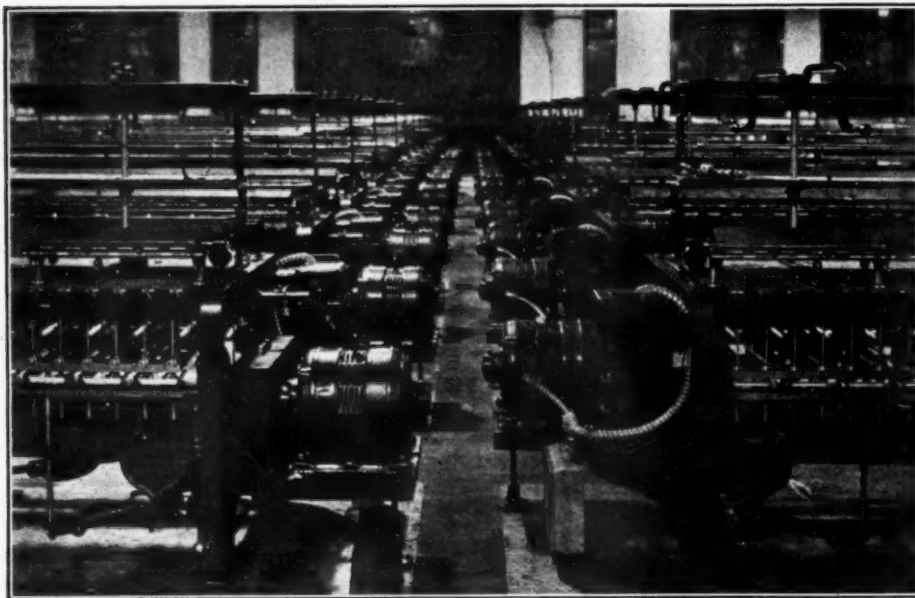
They take the attitude that a modern cotton mill does not need quick pickup and delivery service in the first place. "With their policy of adopting motors of uniform size for the various operations, the average mill needs but about three extra motors to fill in, should a regular motor go bad in any department," Mr. Michael explained.

That means that a plant has to provide only three extras for some 200 to 300 regular motors in order to insure it against loss of time from breakdowns. Nearly all the plants have these extra units. When a motor burns out or otherwise goes dead, all that is necessary to resume operations is to set the extra motor in, connect it and go ahead.

The regular unit can be repaired within the next few days and either put in reserve or be returned to its usual position.

The customers of Michael & Bivens who have not these extra motors, are urged to buy them. Having extra motors the factories then may take the time to crate the broken down jobs and ship them to the repair plant of Michael & Bivens, if the factories are some distance from Gastonia, or if near deliver them by truck. The shop then may take the time to put the jobs through in the routine way.

"We always stress this point," said J. P. Bivens, secretary-treasurer of the company. "It is reasonable that if we work on motors in the routine manner, without rush or overtime costs, we can turn out a better job at the same money than we could by rushing it through and neglecting some of the finer points in order to make up for the extra cost of overtime and rush. We want twenty-four hours for repairing a burned out motor, and we explain to our customers



A Typical Cotton Mill Individual-Drive Motor Installation Serviced by the Michael & Biven Company

that it pays them in the long run to have these extra motors, thereby allowing us the regular time for repairing."

To educate the mill owners on the value of having repair jobs done without rush, the company keeps from six to eight salesmen on the road regularly and uses a considerable amount of advertising. Direct mail and business magazines are largely used.

The concern does not sell new motors; it handles only the installation of them and then solicits repair work.

Industrial plant lighting is also a big line with the firm. Cotton mills are the chief source of business. This business is secured largely by going to the

owners of a plant that has defective lighting, getting permission to make a survey of it, drawing up a diagram and presenting it with recommendations. Securing the contract for lighting a new plant is of course a matter of working the usual sources—architects, contractors and plant owners. The old plants form the company's biggest source of lighting business.

All contracting of importance, and motor repairing, is done by the main plant in Gastonia. The Greensboro branch is at present primarily a retail store, with a small amount of contracting, while the other Gastonia store is principally retail.

Motor Rating on Name Plates

Editor, THE ELECTRAGIST:

I read the editorial entitled, "Motor Ratings on Name Plates," in which it states that manufacturers are being asked to show on the name-plate the maximum horsepower rating under the most favorable conditions.

Excuse me for attempting humor, but would this rating be based on the average temperature at the equator, or, perhaps the manufacturer would prefer to use the circumambient temperature existing at the North Pole.

As a matter of fact, temperatures in the United States do vary during a year's period from 45° minus zero to 120° Fahrenheit.

Or perhaps the manufacturers could

turn out a winter motor and a summer motor. The winter motor would be somewhat cheaper than the summer motor. Or, another good idea, it would pay the dealers to buy 10 HP summer rated motors, hold them over till the winter and sell them as 20 HP motors. Then it might pay to buy little refrigerating sets to be hooked up into the motors and then by keeping the temperature down could sell a 10 HP motor for the price of a 25 HP motor. A Mr. Keely once became quite wealthy from the sale of stock.

Then a good idea would be to have several nameplates to be sent out with each motor, one for every season of the year, and at the beginning of Spring, the winter nameplates would all be re-

moved and the new Spring nameplates put on every motor. Then in Summer, the Summer nameplates would replace the Spring nameplates.

Some motors would be installed in a cement or plaster plant where the fine dust would cover up all the vents and they would heat horribly. Other high class motors would be used on outdoor machinery where there was plenty of ventilation and they never would get hot. I feel sorry for the motor that runs all day covered by sawdust.

Only a few years ago we had what was known as 50° motors. Where the customer wanted a 25 HP motor, the wise contractor sold him a 30 HP-40° motor and didn't worry much about it.

Speaking seriously, the business of attempting to rate a motor on its maximum output will only cause trouble and inconvenience to contractors and public.

The average motor user is not by any means so concerned about getting the most out of his motor as he is about whether it will run day after day without heating or giving trouble.

Wherever there is the slightest question of the ability of a certain size motor to perform its work, the customer will always prefer the next larger size, for there is nothing quite so comfortable as to know that there is ample capacity to carry the load—and then some.

The moment, the maximum rating is stamped on the nameplate, that motor is rated at that horsepower, regardless of the work it is to do, and in my opinion it is a step in the wrong direction. The 40° rating has been satisfactory, motors are reasonable in price, and any change in method of rating is undesirable.

Yours truly,

WILLIAM J. SHORE,
New York City.

Put Tamperers Out of Business

Editor, THE ELECTRAGIST:

Am greatly interested in the All Metal Code and have long hoped that it might be universally adopted, as it is the only safe and sane method. Am hand in glove with you on this matter and any other matters which will eventually put experimenters and tamperers out of business. I realize that my line requires utmost caution in every instance. Every success to you in your grand work.

G. R. SALTER,
Maplewood, N. J.

Estimating for Electrical Contractors

Lesson No. 3—Labor on Branch Circuit Conduit Work

By ARTHUR L. ABBOTT

Technical Director, Association of Electragists, International

ACCURACY is especially important in estimating the labor on the branch circuit conduit work, because it is a much larger percentage of the total labor than that on any other single division of the work, commonly amounting to 35 to 40 percent of the total labor on the job.

Using Labor Units

It has been common to estimate this labor either by applying labor units to the conduit and boxes, or to the conduit alone.

The latter method, that is, basing the labor on the conduit alone, requires the use of a sliding scale of labor units based on the feet of pipe per outlet, and is therefore an indirect and complex method. For this reason, as well as for other reasons which will be explained it must be rejected.

The method of applying labor units to the conduit and the boxes is not sufficiently accurate because the greater part of the labor is required to bring the pipe into the boxes, and the number of these pipe entrances is not proportional either to the feet of pipe or to the number of boxes.

Adjust to Each Job

Any labor units used for estimating branch circuit conduit and box labor must be adjusted in some manner to fit the peculiarities of each individual job. This adjustment has usually been made according to the estimator's judgment; the estimator "senses" the job and fixes the values of his labor units accordingly. Some men can do this quite successfully, but not nearly so many as think they can. The method is not scientific, it cannot be set down on paper, it cannot be readily communicated from one man to another, and it leaves the beginner high and dry.

The method which will be described overcomes these difficulties and takes into account the principal characteristics of each individual job by giving the proper consideration to the following three items:

This is the third lesson in the Course in Estimating by America's foremost authority on this subject. The course started in the January issue and the first two articles concerned, respectively, the method of laying out a job preparatory to taking off quantities and the systematic method of taking off quantities. The present lesson gives labor data on branch circuit conduit work.—The Editor.

A. The Three Elements of the Labor.

There are two items of material to be installed—pipe and outlet boxes; but as stated above, the largest part of the labor is required by the operation of bringing the pipe into the boxes. Some of the boxes are in the ceiling and some are in the walls, and the pipe entering a box may be either $\frac{1}{2}$ in., $\frac{3}{4}$ in., or 1 in., so we have six different kinds of pipe entrances, and correspondingly six different items of labor. The feet of pipe of each size per outlet is variable, so that the labor on the pipe entrances cannot be loaded onto the pipe. The average number of pipe entrances per outlet is two, but a ceiling outlet usually has more than two and a wall outlet less than two. As these may be divided in any way between the three sizes of pipe, it is apparent that pipe entrance labor cannot be included with labor on the outlet box.

Nevertheless this element of the labor must be included in some way, and the simplest, and certainly the most accurate way of doing so is to count the number of pipe entrances of each kind and figure the labor on these as separate items. This is in addition to the labor on the pipe and boxes. Unit times for pipe entrances are given in the accompanying tables.

B. Class of Building Construction.

The actual operations to be performed by the workmen are different for different kinds of building construction. For example, in a building having rein-

forced concrete floors and columns, if deep outlet boxes are used most of the conduit runs are straight from outlet to outlet, while in some other forms of floor construction a 90 degree bend must be made in the conduit wherever it enters a box. Labor units which take into account the actual work which must be done are therefore given for each class of construction.

C. The Conditions on the Job. That conditions on the job may greatly affect the labor cost on the branch circuit roughing-in work is a fact well known to every practical man. At first sight it would seem that there are so many of these conditions that it is useless to attempt to allow for them in the estimate. However, when the problem is analyzed it is found to be much more simple than would at first appear.

Competency Assumed

In the first place, many of the unfavorable conditions which sometimes exist on the job are due to the contractor's own neglect and general inefficiency. In the estimate we can eliminate all such conditions, for it is certainly reasonable for the estimator to assume that competent workmen will be employed, that they will be properly supervised, and that working plans, tools and materials will be furnished as required.

We have left, then, the conditions on the job over which the contractor has no control. The problem is to analyze these conditions and determine just what characteristics make one job different from another in such a way as to cause a variation in the unit labor costs. It is easier to get a clear understanding of the problem by assuming a job on which all conditions are entirely favorable to efficient work by the electrical contractor—an ideal job—such as we seldom, if ever, meet with in practice; then considers how the particular job in mind differs from this ideal job so as to increase the unit labor costs on the branch circuit roughing-in work.

Careful study of actual cases met in practice leads to the conclusion that the variations in size of the building, character of the layout, and delays occasioned by the general contractor account for almost all of the differences between jobs.

Allowance for these job characteristics can be made very simply as follows: Figure the branch circuit pipe and box labor for the ideal job, which would be the lowest possible number of hours; then add a percentage to cover the increased labor due to each of the three conditions as they are found to exist. By using this method we are enabled to figure any job in buildings of one type

CLASS A FLOOR			
Flat Slab (or Slab and Beam) reinforced concrete with concrete columns			
Deep Box - no offsets			
Standard Box requiring offsets			
Standard Times for Class A Floor			
	Hours per 100		
	1/2" Box	3/4" Box	1" Box
Conduit—per 100 ft.	1.13	1.43	2.10
Ceiling Outlet Box			15.5
Pipe Entrance to Ceiling Box—			
No offset	18	21	36
With offset	26	30	48
Wall Outlet Box in tile or brick			36
Pipe Entrance to Wall Box	63	73	98

of construction from one set of labor units.

Job Factor

The total percentage which is added to the branch circuit roughing-in labor to cover the increases due to the three job conditions is for convenience called the "Job Factor." This figure is the sum of the three following percentages which must be determined for every job.

a. Percentage Increase for Size of Building. Time is lost whenever the work on a job or on one particular part of a job must be stopped, to be again started at some later time. On a small building where the conduit and boxes

are built into concrete floors, all work on one floor may be installed in one or two days, then there is no more work to do until another floor is nearly ready to pour, so that the crew must stop work on the job entirely. On the other hand, when the building is sufficiently large, the floor work is continuous, so that there is no lost time on this account. This limit is taken as a single floor area of about 50,000 sq. ft. For a building having this area on each floor no allowance need be made for increased labor. The allowance will gradually increase as the floor area becomes smaller, reaching a maximum of 25 percent for a floor area of 500 sq. ft. or less. Values of this percentage or factor "a" for various floor areas are given in the accompanying table.

The floor area to be used here is the area of one floor in any building in which the branch pipe work is to be built into any form of fire-proof floor construction. In the case of a frame building, or of exposed work in any building, the area to be taken is the total floor area available for work at one time, which will usually be the total area of all floors of the building.

Table of Size Factors

Area Square Feet	Value of Factor "a" (% Added for Size)	Area Square Feet	Value of Factor "a" (% Added for Size)
500	25	8000	14
1000	24	10000	12.5
2000	22	15000	9
3000	20	20000	6.5
4000	19	30000	3.5
5000	17.5	40000	2.5
6000	16	60000	0

b. Percentage Increase for Complexity of Layout. The simplest possible layout is that commonly found in a warehouse or building of similar type, in which the outlets are nearly all in the ceiling and are regularly located. A more complex layout will cause an increase in the labor, because more time must be spent in consulting the plans, in checking the work and in supervision. In a hotel or office building in which there are a number of floors all alike, time is saved because the workmen gain a general familiarity with the layout, also because they can often make up a considerable number of conduit runs in advance of the floor construction.

A large club house is an example of the extreme of complexity, because there will be many bracket, switch and receptacle outlets, usually no two floors

are alike and there is likely to be much paneled work requiring exact locations thereby making the progress of the conduit installation more dependent upon the progress of the building construction. Many conduits for telephone and other low tension systems also contribute to make the layout more complex.

The maximum percentage of increase in labor on account of the complexity of the layout, or value of factor "b" is 10 percent. The following table may be used as a scale with which any job may be compared in order to determine the value to be assigned to this factor.

Table of Complexity Factors

	Grade Value of "b" (% Added for Complexity)
Small 1-story building, simple layout	0
Warehouse, simple layout	0
Factory, simple layout for light and power	1
2- or 3-story store building, light and power	3
Hotel or office building, upper floors typical	4
Large apartment—Large department store—Large school building—Hospital	5
Large bank	6
Large church	7
Large theatre	8
Large residence—Club House	10

c. Percentage Increase to Allow for Delays. Every electrical contractor realizes fully the cost in extra labor of delay in the progress of the building. The building contractor who is efficient in his own work and pushes it along rapidly creates thereby conditions favorable to efficient work for the electrical contractor. The inefficient general contractor is not only slow, but follows no system in his work, and for reasons known only to himself, likes to transfer his operations suddenly from one part of the building to another.

The maximum percentage of increase in the labor due to the inefficiency of the general contractor is 15 percent. This percentage is called factor "c." This maximum value is to be used when the general contractor is known to have a reputation for letting his work drag and using inefficient methods. When by past experience he is known to work rapidly and to use very efficient methods in his work, "c" is to be given a low value, such as 5, 3 or 1.

Frequently the estimator does not know who will be the general contractor on the job. In this case it may seem illogical to make an allowance for de-

lays which may be caused by some undetermined party; but it must be remembered that the labor is being figured by using labor units which are applicable only to an ideal job on which there is no interference whatever by the general contractor with the progress of the conduit work. On the actual job some such interference will very probably occur. It is conservative therefore in such a case to fix the value of "c" slightly above the average, say 10 or 12 percent.

A value having been given to each of the three factors *a*, *b* and *c*, these three quantities are to be added together to find the Job Factor, or total percentage to be added to the labor on the branch circuit conduit, boxes and pipe entrances, as computed from the tables of standard times, in the next column.

The method may be summarized as follows:

A. Labor is figured on the three actual operations to be performed—

installing conduit, installing outlet boxes, and entering the pipe to the boxes.

B. Because these operations are different in different classes of building construction, standard times, that is, hours per 100 operations, are furnished

$$\begin{array}{ccccccc} a & + & b & + & c & = & \text{Job Factor} \\ \% \text{ allow-} & & \% \text{ allow-} & & \% \text{ allow-} & & \text{Total \%} \\ \text{ance for} & & \text{ance for} & & \text{ance for} & & \text{to be add-} \\ \text{size} & & \text{complexity} & & \text{general} & & \text{ed to hours} \\ & & & & \text{contractor} & & \text{labor com-} \\ & & & & & & \text{puted from} \\ & & & & & & \text{standard} \\ & & & & & & \text{times} \end{array}$$

which apply to each of the different classes of construction.

C. The three chief points of difference between various jobs, aside from the class of building construction used, are the size of the building, the layout and the interference of the general contractor with the orderly progress of the work. In order to take care of these points of difference, the standard times

are given as base figures. We calculate the total labor on this part of the work by using these base figures, and then add a certain percentage as additional labor to cover each of the three points.

Standard Times

All labor data is given in hours instead of in dollars, because the hour is a universal and unchanging unit of measurement, while the hours of labor which can be bought for one dollar vary within wide limits in different localities and at different times.

There seems to be some confusion in the minds of some estimators as to whether labor should be figured in hours or in dollars. Essentially, there is no difference; time is money and money is time. An estimate of labor required for a job made up from labor units expressed in the form of dollars is an estimate that the work will require a certain number of hours at a certain average rate per hour just as truly as if labor units expressed in hours had been

STANDARD TIMES

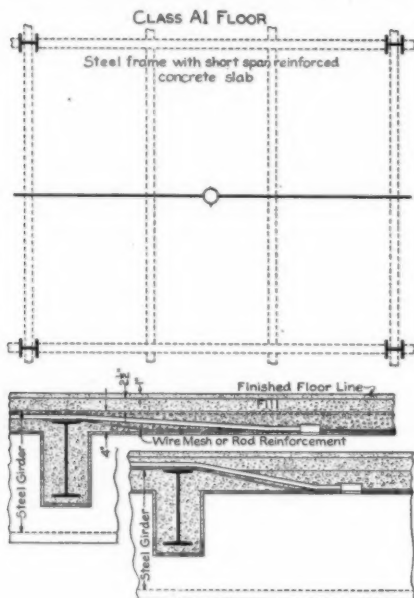
Branch Circuit Conduit Time in hours per 100 feet			Additions for Pipes Entering Boxes Time in hours per 100			
	Size	Hours per 100		Size Class of Floor Pipe or Wall	How Installed	Hours per 100
Built in—Class A-A1-B-D1 Floor	1/2	1.13	Ceiling Outlet	1/2"	A Built in—no offset	18
Class J-K-M Walls	3/4	1.48			A-A1 with offset	26
Suspended Ceiling Work	1	2.10			B	27
Built in—Class D Floor	1/2	3.93			D-D1	31
	3/4	4.30			D2	24
	1	5.00			In suspended ceiling	59
Built in—Class D2 Floor	1/2	2.13			Exposed Work	24
also exposed work, not including labor on straps or hangers	3/4	2.67			A Built in—no offset	21
	1	3.80			A-A1 with offset	30
					B	30
					D-D1	35
					D2	27
			Wall Outlet		In suspended ceiling	65
					Exposed Work	27
					A Built in—no offset	36
					A-A1 with offset	48
					B	49
					D-D1	54
					D2	45
					In suspended ceiling	98
					Exposed Work	45
					Any	
					JK Built in	63
					K	43
			Floor Outlet		M Exposed	25
					Any	
					1/2"	
					J-K Built in	73
					M	46
					Any Exposed	28
					Any	
					1"	
					J-K Built in	98
					M	68
					Any Exposed	47
					Any	
					1/2"	24
					3/4"	28
					1"	43

Labor on fastenings must be added to labor on exposed outlet boxes

used and the total hours so arrived at had been multiplied by the average rate. It must be obvious, however, that the use of the hour as a unit is a necessity if the data is to be of permanent value and is to be used in localities having different wage scales.

Leaving out of consideration the unusually efficient workmen and the very

is to be figured in hours, and this total is then to be reduced to dollars by multiplying by the average rate per hour.



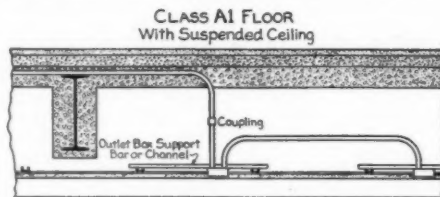
Standard Times for Class A1 Floor

	Hours per 100	1/2" Box	3/4" Box	1" Box
Conduit—per 100 ft.	1.13	1.48	2.10	
Ceiling Outlet Box				15.5
Pipe Entrance to Ceiling Box	26	30	48	
Wall Outlet Box in tile or brick				36
Pipe Entrance to Wall Box	63	73	98	

poor ones, because after all we must deal in averages, a given piece of work should require a fairly definite number of hours of labor for its completion, regardless of whether the crew are all journeymen or equally divided between journeymen and helpers.

The labor units which are given here and which will be published with later installations are called *standard times*, because they are believed to represent fair time allowances for the various operations, which should at least be equalled by an average crew of workmen. They may, therefore, be considered as standards of production which have been set up. If the estimate is properly made and is based on standards, it is not the estimate which is at fault if the actual labor is in excess of the estimated labor; the trouble should be looked for elsewhere.

The total labor for the entire job



Standard Times for Suspended Ceiling Work

	Hours per 100	1/2" Box	3/4" Box	1" Box
Conduit—per 100 ft.	1.13	1.48	2.10	
Ceiling Outlet Box				19
Pipe Entrance to Ceiling Box—				
Case A—from pipe built into floor slab	59	65	98	
Case B—from pipe run in ceiling space	30	33	52	
Wall Outlet Box in tile or brick				36
Pipe Entrance to Wall Box	63	73	98	

The average rate is to be found by assuming an average crew for the job. Thus if a certain job, after taking into

consideration its size and general character, we might decide that on an average throughout the progress of the job, a crew of five men would be required, consisting of one journeyman at \$1.20 per hour, two journeymen at \$1.00 per hour, and two helpers at 75 cents per hour. A day's work for the crew would be 40 hours and the cost would be \$37.60 computed as follows:

1 Journeyman—	8 hours at \$1.20..	\$ 9.60
2 Journeymen—	16 hours at 1.00..	16.00
2 Helpers—	16 hours at .75..	12.00

Total 40 hours \$37.60

In which case the average rate per hour would be

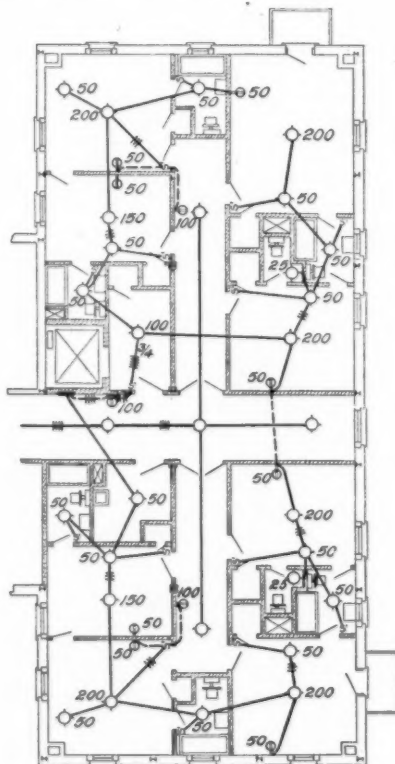
$$\frac{\$37.60}{40} = \$0.94$$

The classification of the more common types of building construction are given in the following table. Four of these types are illustrated by sketches and the corresponding standard times are given under each sketch. Complete data for all the types of construction

Problems

1. Compute the Job Factor for each of the three following jobs.

A. A 2-story and basement building having brick outside walls, and floors and partitions



of frame construction, with stores on the first floor and offices on the second floor. The dimensions of one floor are 85 ft. by 110 ft.

The general contractor works rapidly and efficiently.

B. A 3-story and basement fire-proof school building, having an area on one floor of 174 ft. by 210 ft. The general contract has not yet been awarded.

C. A 12-story fire-proof hotel, dimensions of each floor 93 ft. by 146 ft. The general contractor has the reputation of being slow and has never before built a building as large as this.

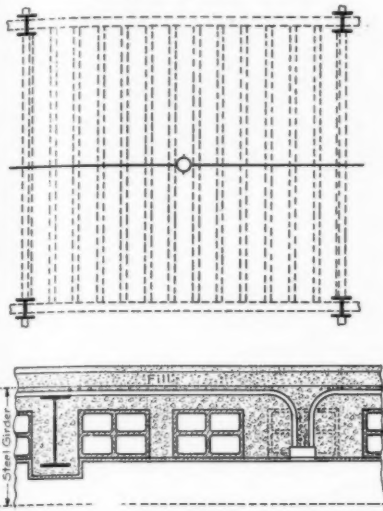
2. The work shown on the accompanying plan requires 570 ft. of 1/2 in. conduit, and 15 ft. of 3/4 in. The floor construction is Class B, the walls are tile and the job factor is 20 percent. Compute the hours labor required to install the conduit work.

3. A crew consists of three men, one journeyman at 90c per hour, one journeyman at \$1.15 per hour, and one helper at 65c per hour. What will it cost to install the following work in a building having Class A floors and tile walls, the job factor being 25 percent?

- 3100 ft.—1/2 in. Conduit.
- 900 ft.—3/4 in. Conduit.
- 330 ft.—1 in. Conduit.
- 200 —Ceiling Outlets.
- 90 —Wall Outlets.
- 380 —1/2 in. Ceiling Pipe Entrances.
- 55 —3/4 in. Ceiling Pipe Entrances.
- 15 —1 in. Ceiling Pipe Entrances.
- 105 —1/2 in. Wall Pipe Entrances.
- 20 —3/4 in. Wall Pipe Entrances.
- 5 —1 in. Wall Pipe Entrances.

An Apartment House Bell Wiring Time Saver

CLASS B FLOOR
Reinforced Concrete Slab with
concrete joists and tile filler



Standard Times for Class B Floor

	Hours per 100	1/2" Box	3/4" Box	1" Box
Conduit—per 100 ft.	1.13	1.48	2.10	
Ceiling Outlet Box				17.5
Pipe Entrance to Ceiling Box	27	30	49	
Wall Outlet Box in tile or brick				36
Pipe Entrance to Wall Box	63	73	98	

listed are also given in the three tables on page 23.

Classification of Building Construction

FLOORS

- Class A Reinforced concrete, either flat slab or slab and beam, with reinforced concrete columns.
- Class A1 Short span reinforced concrete with steel frame.
- Class B Reinforced concrete slab with concrete joists and tile filler.
- Class C Flat tile arch, conduit laid directly on the tile.
- Class D Two in. wood joists, double wood floor, no strips.
- Class D1 Same as D except with 3/8 in. strips between rough floor boards and finished floor.
- Class D2 Same as D except with 3/8 in. strips between joists and ceiling.
- Class E Exposed Work.

WALLS

- Class J Tile.
- K Brick.
- M Wood studs, wood or metal lath.

Facts and Figures on Construction Industry

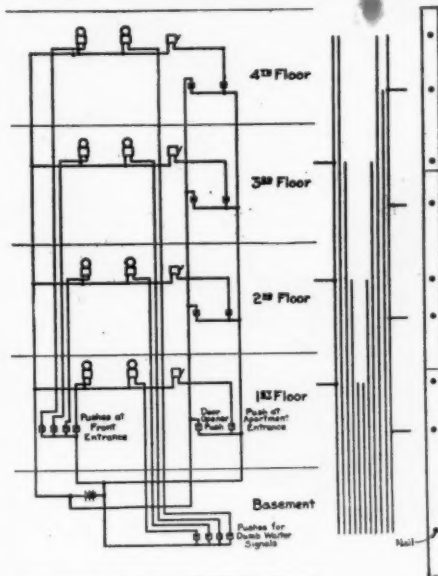
The Department of Commerce announces the reprinting of the articles on Construction and Construction Materials from the Commerce Yearbook for 1923, in a separate pamphlet. The reprint includes a 24-page article on "Construction."

An interesting short-cut in installing bell wiring was observed the other day in a four-story apartment building. The floor and partitions were of frame construction. There were twelve apartments on each floor, and all floor plans were alike, so that the bell work could be handled at twelve rising points. Each apartment was to have a bell operated from a push-button at the first floor main entrance, a buzzer operated from the apartment entrance, and a bell for dumb-waiter signals to be rung from a push in the basement. This is all clearly shown in the accompanying diagram.

Some planks laid end to end on a row of barrels were used as a work table. The floor heights having first been measured, the distances were laid out on the planks, and nails driven at all points where wires were to end and where taps were to be taken off. The four wires to the fourth floor bells and buzzer were then strung out and the ends secured by a few wraps around the first and last nails, and taps were made at the necessary points. Next the one wire which led to the fourth floor pushes was stretched out and the taps made, and so on until all of the wire was stretched. The whole was then

formed into a cable by wrapping with friction tape every two or three feet.

Three-quarter inch holes were then bored through floors, plates, bridging between studs, etc. and the cable was taken to the top floor and fed down through the holes, the ends of main



wires and taps being secured to nails driven into the two by fours.

The whole operation required less than an hour for two men.

The Small Business Needs the Trade Association

Trade associations, according to a recent bulletin of the Chamber of Commerce of the United States, serve a very useful purpose which is generally overlooked. In the prosecution of trade associations the public, and perhaps to some extent the authorities, regard the trade associations as representing corporations with huge accumulations of capital. The fact is that the larger and richer the corporation, the less its needs for a trade association. It has, in itself, the means of obtaining all of the information which it needs in order successfully to compete.

The membership of the National Chamber, through a referendum vote, has made the following recommendations regarding the use of statistics by trade associations:

- 1—Statistics of capacity, production, stock and sales, and statistics of actual prices in closed transactions, should be col-

lected by a trade association for its industry or branch of commerce.

- 2—Such statistics should be distributed without any comment or interpretation which could induce or facilitate concerted action on the part of members.

- 3—The statistics should be made as available by a trade association to the public and government agencies as to the members of the association.

Chamber's board of directors is advocating the carrying into effect of these recommendations. In so doing it has to consider, not its own opinion of the legality of the activities which are included, but the attitude of the government and its officials who have relations to the question. If it is forced to a conclusion that the view is held in government and its officials who have relations the Chamber's members have declared are desirable, it has announced that it must consider seeking from Congress such minor amendments as will affirmatively permit the activities it advocates.



These Glimpses of the Exterior, Interior and Several Window Displays Makes It Easy to Understand Why the Miller Company Is Successful "Off Main St."

You Don't Have to be on Main Street

A WELL-KNOWN author wrote a book about "Main Street" and cleared a fortune from it. But a lot of electrical contractor-dealers could write their own books about "Main Street" and how much a location on it has cost them.

It is seemingly an axiom among retailers of all kinds that their stores must be on the main shopping streets of their towns if they want to get the business of the shopping public. That a merchant will get more business on "Main Street" than he will on a sidestreet is a foregone conclusion, but whether the profit on that additional business compensates for the greatly increased cost of a location where rents are sky-high is another question and one that can be solved only by the most careful checking of costs and profits.

In Pasadena, California, is a merchant who believes that business can be secured in a sidestreet store and that customers appreciate good service, quality goods and an honest guarantee enough to keep coming back for more of the same. The company is the H. L. Miller Company. It has been in business at or

near its present location for the past twenty years and its "off the beaten path" location in all that time has never acted as a brake on its business. Quite the contrary for as will be shown later on there is at least one thing which will bring customers to a sidestreet store quicker than to one in the main business area.

The store is located at 60 North Raymond Avenue, which is one full block from Colorado Street, the principal business street of Pasadena. In addition to being off the main business street the store has strong competition since the office of the Southern California Edison Company is only two doors south. Next door to the north is the only gas company in Pasadena. The only other merchandising business of any consequence nearby is a furniture store which is across the street and about a block north, so that the success of the Miller company is certainly not due to any additional business gained from "drop in" trade. Business on Raymond Avenue extends only about one block north of the store and just beyond that is a city park and interurban railway terminal.

At no time, according to Mr. Miller, has Raymond Avenue been considered a real shopping district, though it has always been a fair business street. As a consequence store rent amounts to only a little over 2 percent of the total amount of business done by the store. According to figures supplied by Mr. Miller, the rent for a similar space on Colorado Street would be three times the amount of his present rent.

The company would undoubtedly increase its retail sales and small "pick up" business by moving to Colorado Street, but it is the conviction of all the partners in the firm that the business could not possibly be increased sufficiently to compensate for the additional expense.

Many dealers would ask, "But how are you going to get customers to a sidestreet store?" In answer to this an outline of the Miller company's business policy is interesting.

At the beginning in 1904 the business was founded by Mr. Miller as an individual and later on was incorporated, there being four members of the firm. It was the policy at the very start

to handle only high class merchandise and to give customers the very best service possible. The store has always been kept as neat and clean as it appears in the photograph above and as much effort has been expended in finding at-



H. L. Miller

tractive display methods as in any other department of the business.

Being engaged in both contracting and merchandising has been means of getting business. It is found that high-grade work and good service from the contracting department will make a retail customer out of an individual who originally wanted only a little wiring.

Here is something that few electrical

dealers have recognized as an advantage that the "Main Street" merchant does not enjoy.

"We have experienced very little difficulty," says Mr. Miller, "in holding our customers on account of our location. A real reason for this, I believe, is the fact that parking space for cars is more available here than in some of the main street locations."

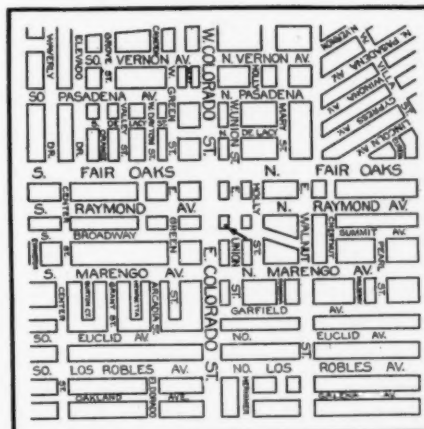
The company carries on a consistent advertising campaign in the daily papers and makes an allowance for this on its yearly budget of about 2½ per cent of its estimated total business for that year. The store has always been known as a one-price house. Special inducements are not used to get customers into the store, inasmuch as the company believes that a customer who will buy only when he or she thinks they are getting something for nothing is not the customer who will give a store normal business.

Window display has always been a strong point with the firm and the displays have always been the kind that attract more attention to a sidestreet store than a main-street store with ordinary windows could command.

Several unusual displays are shown above. One is a special window put on at the time of the N. E. L. A. convention in Pasadena. The bright circle around the sign in the center of the window was made by a rotating wheel

of colored lamps connected to a flasher so that the color combination was constantly changing.

Probably the most striking was the Christmas window shown. This won a



The Miller store, indicated by the arrow, is located a full block from Colorado St., the main business thoroughfare

prize in a national cleaner window display contest. The sky back of the buildings had a sunset effect produced by various colors of lamps located back of the buildings. The bright star in the center of the sky was illuminated from behind. The theme was the birth of Christ.

The other display won first prize in a contest put on by the California Electrical Co-operative Campaign.

Keeping a Record of Material Transferred From One Job to Another

A member company writes us that they are unable to keep records of material returned from jobs, because very frequently the material left over after the completion of a job is taken directly to another job, instead of being returned to the stock room. This difficulty is experienced by all contractors who do much small work, especially scattered jobs of residence work, where about the same items of material are used on all installations. The further difficulty is also involved of charging this surplus to the job where it is actually used.

There is of course considerable economy in delivering the material direct to the new job instead of bringing it back to the stock room.

[illegible]

The Commonwealth Electric Company of St. Paul has found this transfer of material to be such a common occurrence, that they have had a special record form made up which solves the problem quite completely. This form which is reproduced on this page, is 5 in. by 7 in. in size, and is made in three colors for use as original, duplicate and triplicate. The sheets are bound in a book which is of convenient size for the coat pocket. A list of the material transferred is entered on the form, making two carbon copies and showing the construction order number to be credited and the construction order number to be charged. The original and duplicate are perforated and are torn out of the book, sent to the office and become a part of the cost records of the two jobs. The form is filled out by the man who makes the actual transfer of the material, usually the superintendent, his assistant or the truck driver.

Radio Service Hints

Every User Wants Selectivity

The average customer who buys a radio receiving set nowadays wants, not to experiment, but to get results and this includes the ability to select the station he wants and tune out all other stations. This is not an easy matter with the present multiplicity of high-powered broadcasting stations, but here are some of the ways the service man can help the customer get the best selectivity, as advised by the Apco Manufacturing Company:

1. If an outside aerial is used, keep it as short as possible consistent with the best results.
2. A condenser should be placed in series in the antenna circuit. For the average receiver the capacity of this condenser should be .002.
3. If the receiver is powerful enough it should be operated on a loop rather than an outdoor aerial, for a loop is directional and therefore selective.
4. Advise the customer always to keep the batteries at the proper pitch.

Placing the Lead-In

This has little to do with the efficiency of the set but it is an extra touch of service that is apt to make the customer remember the man who installed his set. It is often better to place a lead-in at the top of a window, where it will be out of the way and there will be no danger of disturbing it by opening the window. It is better protected from the window in this manner and the lead-in does not show in front of the window.

Headphones May Be at Fault

Many a customer comes in with a complaint about his set and a service man is sent out only to find that it is merely the headphones which are at fault. When the set begins to give weak signals and a check up reveals that the receiver is in perfect condition the customer should be advised to take another pair of phones. If the signals come through louder with the new phones the trouble is in the old phones and the magnets should be reenergized. If the phones have refused to give any

The day of the radio fan is fast going by and the great public with no knowledge of radio or desire to know is buying sets. This is increasing the need for service and as a service to the electrical contractor this department is started. Here will be found each month a few short hints on trouble detection, prevention and removal.—The Editor.

signal at all, the only thing to do is to sell the customer a new pair and warn him that he must be careful about too much B battery current. This will burn out a phone very quickly.

Keep Your Eyes on the Ground

A poor ground connection will cause poor results and gain ill will for the set when after all it is the service man who installed it that is at fault. Cold water pipe systems usually make the best grounds when the pipes lead directly into the ground and there are no insulated couplings in the pipe line. Many times in connecting the ground wire to the pipes of hot air or hot water heating systems poor results will be obtained because insulated couplings are used in the pipe line which actually insulate the receiver from the ground. Rust and erosion in pipe lines also sometimes cause high resistance joints and hence poor grounds.

In any case, in making a ground connection, scrape the metal pipe or rod to which the ground wire is attached, very clean and bright, then wrap the wire securely around it several times and solder the connection securely, making sure that the soldering iron is hot and that the "solder" flows into the joint.

A ground clamp can be used to good advantage, but, again, great care must be taken to see that the connection is clean and bright before tightening the clamp down onto the pipe or rod.

In the country the best ground connection obtainable is a metal rod or pipe driven four or five feet into the ground.

Watch Out for the Radiator

Where no better ground is available hot water or steam radiators have aided reception by providing a fairly efficient ground or connection, although as noted above a cold water pipe is better. Sometimes, however, a radiator causes much trouble. The presence in the room near the set of a large metal body, such as a radiator, ventilator, metal filing cabinet, stove, furnace, etc., may cause the receiver to become inoperative.

Again, although it may not be readily believed, the loudspeaker, if of metal, and particularly, if it has a large metal base and is placed on top of the receiver cabinet may cause similar trouble. Another point to bear in mind when advising the customer on the use of his loudspeaker is that, with any receiver, the loudspeaker should not be placed with the cord running lengthwise along the receiver at the opposite end of the receiver to which the loudspeaker cord is attached. In this case the presence of the wires in the loudspeaker connection cord may cause an undesirable coupling and energy transfer between portions of the circuit with the result that there may be a considerable reduction of sensitivity and selectivity of the receiver and possibly inoperative conditions. It is well to bear this in mind when installing a receiver in a customer's home. If the receiver is installed a short distance such large metal masses, the trouble is eliminated.

Antennas vs. Trolley Wires

When a customer's residence is situated on a trolley line the installation man faces a problem in putting up an aerial. If placed parallel to the trolley wires there will be a great deal of interference. Placing it at right angles to the wires helps but oftentimes this makes too short an aerial. A double wire aerial will help here sometimes. In this the wires should be run parallel and about three feet apart. The two far ends should be connected together and the two near ends joined to form the eliminated and thus a customer is kept and perhaps others gained.

A Cultivator of the Farm Plant Field

ON Pearl Street in Hartford, Conn., just across from the imposing capital building is the power and light headquarters for the farmers of the four surrounding counties. It is the store of the Thomas A. Stewart Electrical Company and anyone looking at its unassuming storefront would hardly suspect that behind it had taken place a business revolution that has meant almost as much to farmers nearby as the other revolution that was successfully engineered thereabouts in 1776.

About ten years ago the Stewart company's business consisted almost wholly of wiring. Just about this same time farm light plants began to reach the market and as an experiment the company put a few of these in stock and started to feel out the market for them. Coincidentally the wiring business in Hartford took somewhat of a slump, due to decreased building, the business scare brought on by the opening of the European conflict, and the entrance into the wiring game of many curbstoners who cut prices right and left. As a result Mr. Stewart found he had time to concentrate some sales energy on the farm plants. The more time he put in on this phase of the business the brighter its future appeared to him and when wiring resumed its normal stride again, it was discovered that the Thomas A. Stewart Company hadn't stayed put. It was out of the wiring business for good and heading for success as a dealer exclusively in farm light and power plants.

Since making this right-about-face in business the company has become one of the largest dealers in farm light and power plants in all New England. A record of 600 installations in Litchfield, New Haven and Middlesex counties,



FARM PLANT HEADQUARTERS IN HARTFORD

From this unassuming store have gone forth over six hundred installations, which include everything from small farms to a large summer resort

most of them in the last three years, tells the tale of a real success. They range from the modest plant put in at minimum cost to installations running up to four and five thousand dollars. One layout, at a summer resort, includes the lighting of seven cottages, a garage, a casino, a bowling alley and all the street lights, a miniature isolated plant in itself.

When the correspondent arranged for an interview with Mr. Stewart, one question was uppermost in his mind: What methods had the company used in effecting so successful a switchover from wiring to farm lighting? Though they are both branches of the electrical business, the sales problems of one are more or less different than of the other. In the wiring business a contractor deals

mainly with a public which is already fairly well educated on the value of electrical service and moreover he is selling something the cost of which is apt to be considerably less than it is for a farm plant, the cheapest of which run into several hundred dollars. Selling to the rural field necessitates a campaign of education before anything can be done about getting names on dotted lines.

The initial step is to get good leads so that missionary work will not be wasted on prospects who are either not financially good or are not to be interested for various reasons. How are good leads to be gotten was the query put to Mr. Stewart.

"In two ways," was the reply. "The central station here is a fruitful source of them. A large number of farm owners are coming to see the value of electrical service and make application to the central station to be put on its lines. In many cases this is not practicable and the power company turns over the names to us. We see the farmer, explain that it will probably be some time before the power lines are extended into his territory and very often sell him a plant with the agreement that we will buy it back from him on an equitable basis whenever the power lines do reach his farm.

Many contractors are so located that a rich farming territory is right at their doorstep. To these it will be interesting to learn how this dealer branched out from an exclusive wiring business and finally became one of New England's largest dealers in farm plants.

—The Editor.

"Another good way to get good leads is to go out and get them. We keep six salesmen busy in the territory winter and summer, and in addition to that have subdealers in almost every community in four counties. These are garages or small stores and though they do not actually close many sales for us, they are very valuable in furnishing information on the needs and the circumstances of the surrounding farmsteads. A salesman does not have to go into a territory blindly after he has talked to one of these subdealers."

Works Winter and Summer

The missionary work goes on in winter just as actively as in summer, according to Mr. Stewart, though most of the prospects live on roads off the state roads and the snows are heavy and frequent. The salesmen go as far as they can with their cars and then hire a horse and buggy or trust to their feet.

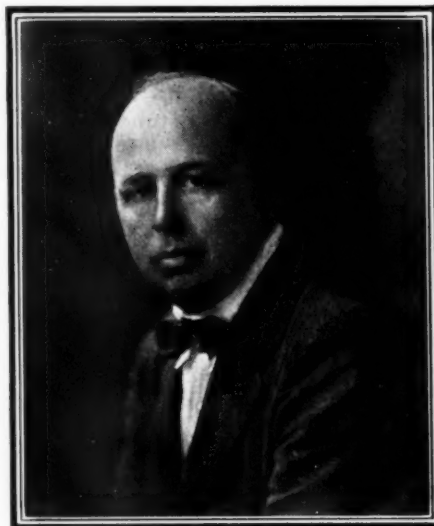
The winter months, Mr. Stewart has found, are actually as good or even better than the summer for missionary work among the farmers. The prospect has more time to listen and he can usually be found in or near the house instead of out in the fields following a plow or harrow. He has less on his mind with crops disposed of and usually knows by then just where he is financially. Most farmers are not only willing but even eager to talk to someone who knows the farmer's problems and can tell him about ways of improving his property and lightening his working day.

Converting Prospects Into Sales

It takes a great many of these visits sometimes to convert a prospect into a sale, but when the sale is made it is usually large enough to compensate for all the effort given to it. Mr. Stewart tells of one farmer who was visited by a salesman two or three times a year for three years and then finally came in to the store unsolicited and gave an order for a complete lighting and power layout that ran into a good many hundred dollars. The salesman at no time had gone very much out of his way to call on the man, merely making it a point to drop in whenever he was in the vicinity.

While the individual sale is the backbone of the Stewart business the real feature of it and the feature which has made it more than ordinarily successful is the special local campaign. First a territory is thoroughly canvassed, until

the company has on its list approximately 100 good prospects in the country surrounding some fair-sized community. When this list is ready an advertising campaign is started in the farm paper that serves these prospects, full page space being used two or three times a week—the expense is not great in the small farm paper—for a month, advising the readers that on such-and-such a date a carload of farm light plants will be available for that community and that by purchasing them cooperatively and in carload lots they can get the plants much cheaper than buying them individually. This selling in lots of a carload or more is really the nubbin of the whole proposition, since the dealer gets a larger discount this way, does not have to store the plants in his stockroom and in effect acts merely as



Thomas A. Stewart who believes that sales result from advertising—and selling

a broker until the plants are delivered. Unless a full carload is sold the sale is called off and none are delivered. A special discount is offered the purchaser if he does his own hauling from railroad to farm.

All the while the advertising campaign is being carried on, the 100 selected prospects are receiving sales literature from the Stewart company and when the sale actually does come off it can usually be wound up in two or three days, so much interest having been aroused. From thirty to forty plants on the average are sold in a campaign such as this.

With the end of the sale the company moves its campaign on to some other community, but this is far from being

the end of getting business in the first territory. It is not at all unusual to have one plant which is in operation sell two or three more to farmers who see what electric service can do on the farm. In addition to that there is a large and ever-growing market for accessories such as washing machines, milking machines and all the other appliances, large and small. No intensive effort is made to get this business, outside of advising the farmer what he can buy to put on his "private line," and sending him sales literature on appliances as it comes out.

Service Not Price

In all his sales the thing Mr. Stewart emphasizes is the service that a farm plant will give, the comfort of having electric power to do the farm chores, the convenience of having electric lights in the house and barn. His aim is to sell satisfaction and not price. He is always willing to give an estimate of what a plant and wiring job will cost but he does none of his work on a price basis, and he loses surprisingly few sales on account of this.

Women, he has found, are a large factor in the purchase of the light and power plant, since electricity will reduce the drudgery to which they have been accustomed as much as it lightens the burden of the men of the household. Therefore the Stewart salesmen always try particularly to interest the women of the family in the plant and most of the pictures of what electricity will do for the farm are drawn for the feminine contingent.

When Something Goes Wrong

The service end of the business Mr. Stewart has discovered not to be particularly onerous. The plants are guaranteed for one year and have proven to be more or less fool-proof, but whenever something goes wrong with a customer's installation a repair man is sent at once. A charge is made for labor and traveling expenses and parts are replaced free during the guarantee period. In this way the service department is made to pay for itself.

Most of the plants are sold on time payments but very little trouble is experienced with collections. A conditional bill of sale is given the customer so that if he should default on his payments at any time ownership of the plant reverts to the company. Notes given in payment are discounted at the banks in various communities and the banks do the collecting.

Factors to Consider in Selecting Wire

By F. A. WESTBROOK, Consulting Engineer

WHEN an electrical contractor bids on a job he is, in effect, selling service as much as anything else—really more than anything else. This means service not only from the standpoint of getting the electrical equipment installed but installing it in such a way that it will operate without unreasonable interruptions. Laying aside, for the moment, the question of machinery and other apparatus, let us consider the part played by the wires in regard to the question of continuity of service. If for any reason the wire fails it makes little difference how good or how expensive all the rest of the electrical equipment may be.

Local Conditions

The electrical contractor needs to bear several different things in mind when he plans his wiring, the first being the type of wire demanded by local conditions. Obviously there is no use in a wire manufacturer making a high class product of the best raw materials and subjecting it to all sorts of tests as well as having it inspected by his customers' representatives, and so on, unless that particular kind of wire is used under conditions which it is designed to withstand.

For example, is it likely to be installed in a hot or a damp place? If it is to be subjected to heat, varnished cambric insulation should be used because rubber will age prematurely. If continual dampness is liable to exist then a lead sheath is necessary because braided rubber covered wire will sooner or later deteriorate. If it is both hot and damp then lead covered varnished cambric wire should be used.

Manufacturers' Service

To enumerate the particular make up of wire for any given set of conditions is too long to go into here. Several manufacturers have comprehensive catalogs and good engineers for furnishing just this kind of service to their customers. The main thing to do is to observe the conditions if the work is to be done in an existing plant; or if it is a question of wiring a new building to take the trouble to investigate general conditions in that line of industry and

Wire is not just wire and this is particularly true as regards so-called code wire. Intelligent buying by the contractor will go a long way towards making satisfied customers. There are many cases where selection of the wrong wire will cause unsatisfactory results.—Editor.

take them up with the manufacturer. For the sake of his professional reputation the contractor is naturally anxious to do his work so that it will render the best possible service. Likewise, the wire manufacturer is just as anxious that this customer, in this case the contractor, should be satisfied but both are impossible unless wire is used that will stand up. Consequently any manufacturer is glad to co-operate with the contractor if he is only given the opportunity.

Observe Industrial Conditions

In reporting to a manufacturer it may be only necessary to say that the installation is to be made in a wood working factory, a refrigerating plant, a hat shop, etc. He will immediately know, if his field men have been "on the job," that certain parts of hat factories are very wet, that in other parts the insulation must be protected against the heat from electrical heaters; if it is a refrigerating plant he will know that there will be a great deal of condensation in the conduits which calls for rubber and leaded wire. On the other hand if it is proposed to wire a foundry or boiler room he will know that the air is hot and dry and that varnished cambric braided wire is the thing to use. Sometimes there will be so much heat or possibly destructive fumes that flame-proof or slow burning wire run on knobs and tubes is the only way to supply the machines with power.

Another important fact of which the manufacturer should be advised is the voltage which is to be employed, instead of simply specifying a certain thickness of insulation, as is so very frequently done. Of course, the insulation must

have a certain thickness for any given voltage in order to be effective as an insulator, but for voltages above 1500 it is inadvisable to use rubber without a lead sheath. This is a matter which has caused endless mystification, dissatisfaction and trouble. The reason is simple enough. A conductor (the smaller the more marked the effect) which is charged is surrounded by an electrical field of stress causing corona. For voltages under 1500 this is of no consequence but at about this point there is sufficient corona, although still weak enough to be invisible to the eye even in the dark, to cause trouble. Corona causes the formation of ozone and ozone attacks rubber compound, causing it to harden and crack—in other words to age prematurely. The result is that at bends, where the rubber is under tension on the outside of the curve, cracks are liable to develop very soon which will occasion a breakdown of the insulation. Many apparently unexplainable causes, except on the basis of defective material, have been traced to this cause. The remedy is simply to use a lead sheath over the rubber insulation or, if the location be a dry one, to use varnished cambric insulation with a braided outer covering. Certain special rubber compounds are also practically immune. This whole question of the corona effect due to only moderately high voltages seems to be only so dimly comprehended that it is worthy of very careful consideration.

Wrong Selection Expensive

Bearing all these details in mind it is not difficult to see how easily a wrong selection of wire make-up could be made. It is equally plain that it is much less expensive and generally more satisfactory to take even a good deal of trouble beforehand to decide on the correct type of wire than to rectify faults after the installation has been made and everybody is excited because something has gone wrong.

Another matter which seems to be complicated by a lack of uniformity among purchasers of wire is the basis on which the question of quality of rubber insulated wire is decided. There

are three grades of rubber insulation in general use—Code, Intermediate and 30 per cent. Specifications and tests for Code and 30 per cent wire are prescribed by the National Electrical Code and the American Institute of Electrical Engineers respectively. The Intermediate grades are different for every manufacturer. There is a 40 per cent grade but it is used little except for marine work.

As regards Code wire, the specifications and tests to which it must conform are comparatively little criterion as to the life which may be expected of it, at least they do not give full information. For instance, according to some methods of vulcanizing, the wire may show much higher insulation (megohms) when first made than with other methods. Nevertheless the wire with the higher initial insulation resistance usually comes down to that of wire made in other ways after exposure to the atmosphere for a short time.

Factor of Assurance

Before shipping from the factory the wire is also subjected to a voltage test after it has been submerged under water for something like twelve hours. The object of this is to make sure that there are no weak spots in the insulation which will break down in service. The test is always made with a voltage many times greater than the operating voltage so as to provide a "factor of assurance." This factor of assurance varies with different sizes of wire and operating voltages, being, as a general thing, of less magnitude for large sized conductors and higher operating voltages where the thickness of insulation is greater to begin with and where, consequently, a slight variation of insulating wall would not be so likely to result in dangerous weakness. Now it is perfectly obvious that if the insulation has a reasonable factor of assurance there is nothing to be gained in its being any higher. For instance, to take an extreme case, there is no sense in using wire for 110 volt service which will stand a voltage test of 5000 volts where in all conscience 1500 to 2500 volts is ample.

Assuming that we have an insulated wire with good insulation resistance which will prevent leakage currents and sufficiently high voltage test to satisfy the most cautious that there are no imperfections (both being at least up to Code standard), the real thing that we want is long life, and mechanical qualities which will enable it to be installed

with the least effort and danger of injury to itself.

The matter of length of life can be indicated with some degree of accuracy, at least in regard to the superiority of one sample over another, by means of the "Geer test," which seems to be at least about as good as anything of the kind so far devised. Rubber deteriorates from heat and oxidation. The Geer test simply consists of placing samples of rubber in a box or oven of some kind through which a current of air flows and which is maintained at an even temperature of 158°F. An exposure of this kind for four days (96 hours) is equivalent to about two years of ordinary life. The degree of aging is measured by the loss in tensile strength of the rubber going through this process.

Voltage Test

Another interesting fact which will appear obvious enough when mentioned but which is quite likely to be overlooked, has to do with the voltage test. The Code specifications require that the voltage which determines the factor of assurance (ratio of operating voltage and test voltage; the factor of safety is the ratio of operating voltage to breakdown voltage and is of course much greater) shall be applied for one minute. The Standards of the American Institute of Electrical Engineers requires, for 30 per cent wire, that it be applied for five minutes. Now it is a well known fact that an insulating material can resist a much higher voltage applied for a short time than is possible for a long time. Consequently, when the statement is made that some wire can withstand a very high voltage it is a good plan to ask for how long that voltage was applied. Even the suddenness with which the voltage is applied has a good deal to do with the ability of an insulating material to resist it, for it is possible to bring the voltage up to a much higher magnitude when applied gradually than when thrown on all of a sudden.

Test for Mechanical Abuse

The test which gives the best indication of how much mechanical abuse the wire will stand is the "stretching test." There are really three tests of this kind. A piece of the insulation is pulled apart to determine its tensile strength; the amount of elongation, or stretch is measured before breakage occurs to determine its elasticity and the amount of "permanent set" after stretching a piece

of a certain length a certain amount, also as a measure of its elasticity—that is, a piece initially two inches long which is stretched to six inches and then, when the pull is released, returns to a length of 2¼ inches will have a permanent set of ¼ inches. Wire insulated with rubber compound having high tensile strength, great elasticity and small permanent set would naturally be expected, and rightly so, to withstand strenuous pulling and even some kinking and stepping on although all three of these actions are very frequently carried to a point little better than abject abuse.


Another matter which, perhaps, scarcely needs mentioning but which is of great importance, is the tightness of the braided covering, its smoothness and the degree to which the rubber compound sticks to the copper. If the braid is not tight it is liable to bunch when the wire is being pulled, especially if there is much friction; if the outer surface is not smooth it will greatly increase the friction; and if the compound does not adhere to the conductor sufficiently it is liable to slip and cause bunching. Contractors sometimes complain that the rubber sticks so badly that it unduly retards the workmen. Undoubtedly there is a happy medium but this point is very largely dependent on how hard the wires are going to be pulled in the process of installation. All three of these items are worthy the careful attention of the user of wire.

Inexpensive and Pleasing Advertising

The sale of a fuse plug does not ordinarily mean much to the electrical contractor-dealer, being more in the nature of an accommodation to the customer. But the Electric Wiring Company of Kansas City, Mo., takes advantage of the sale of a fuse plug to tell people of

GREETINGS:

This is a small but useful item from a very complete stock of Electrical Appliances, Wiring Material, Lamps, Fuses, Radio Supplies, Etc. A Fuse Plug's work is limited, but we are prepared to do any kind of repairing or new work, large or small. We are an Old Concern in a new location. Let us clean, oil and test your fuse for summer use. We Call for and Deliver.



ELECTRIC WIRING COMPANY

"In the Country Club Plaza"

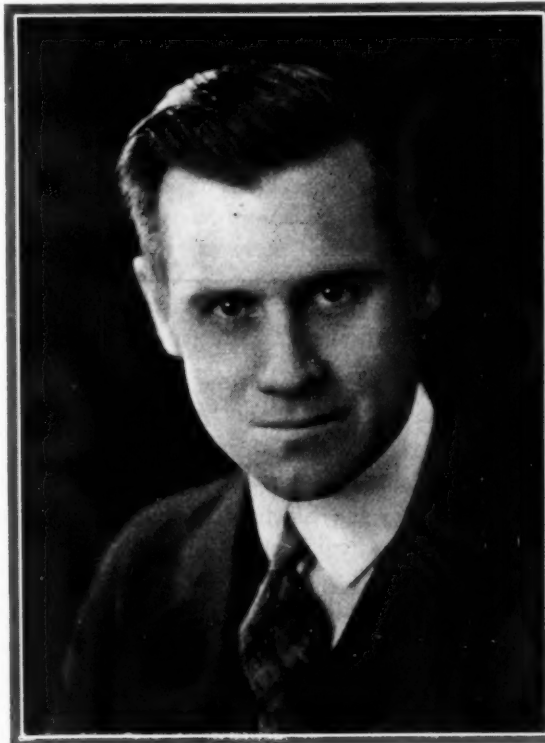
ED. F. MILLER, Prop.
218 W. 47th Street

ESTABLISHED 1898
Westport 2200

the service it is ready to render on larger items. On every plug that goes out is tied an address tag, containing on the reverse side as illustrated the word "Greetings," in large type and in smaller type a list of its more important merchandise and services.

L. C. MacNutt, New York City

Eighteen years ago the train from Boston deposited L. C. MacNutt in the Grand Central Terminal in New York, with a total of twenty-five dollars cash and an inexhaustible fund of self reliance and initiative. Today he is president of MacNutt, Watts & Tankard, one of New York's most successful electrical contracting firms. "Mac," as he is called by his friends, was born in Nova Scotia in 1885 but soon afterward arrived in Boston with his family. There he got his education, graduating from the English High School in 1907. For three or four years previous to graduating he spent his summer vacations in the shops of the General Electric Company and got enough of a taste of electrical work to decide he liked it. But when he left school the panic of 1907 was on and jobs were scarce there so New York was his next stop. Jobs were almost as few and far between in Manhattan, the \$25 was soon gone and his first earned money in New York came from washing dishes. Not long after this soapy experience he found the place he had been looking for, with the Phillips Manufacturing Company, in whose shops he became a commutator turner on generators. Inside of two years he had become superintendent of the Phillips Company and a year later went into the contracting business on his own. He was a partner in the firm of MacNutt & Steinert until 1919 when the corporation of MacNutt, Watts & Tankard was formed. The company specializes on industrial installations. "Mac" has been active in organization work for many years, is a member of the S. E. D. and is now serving as president of the Independent Associated Electrical Contractor-Dealers of Greater New York.



Electragists You Should Know

D. D. Sturgeon, Denver



The era of electricity was just beginning to dawn on the Inter-mountain region when D. D. Sturgeon—known to some as Dave and to others as Dwight—made the long trek westward from his home at Newark, Ohio, and settled in Denver to help shed light on the activities of man. At that time the first lighting fixture factory in the Denver territory was getting into its stride under the leadership of Albert Sechrist and Mr. Sturgeon enlisted his services under the Sechrist banner. During the following seventeen years he passed through every department of that firm which since has grown to be the largest fixture manufacturing concern in the west. That his training was well rounded is shown by the success he has attained since he went into business for himself. That occurred almost fourteen years ago and in that time his establishment has grown from a meager two-man electrical contracting shop on a side street to one of the largest in the city. Ten times that number are now carried on the payroll through the year and the volume of business done was close to a quarter of a million dollars in 1923. There is a merchandising department which is also a money maker, due perhaps to the fact that Mr. Sturgeon and his wife are firm believers in the electrical idea. They practice what they preach, too, for they live in a completely equipped electrical home in North Denver. Mr. Sturgeon has served as vice chairman of the Electrical Cooperative League of Denver and is a member of the Denver Electrical Contractors' Association, and the Master Builders' Association. In addition to this he takes a prominent part in civic activities, belonging to the Rotary Club, the Motor Club, the Press Club and the Denver Civil & Commercial Association.

The Electragist

Official Journal of the
Association of Electragists—International

S. B. WILLIAMS
Editor

H. H. STINSON
Associate Editor

One Code or a Hundred?

Does the electrical industry want the National Electrical Code or does it want a number of State and Municipal codes?

There can be no surer line of defence for the National Electrical Code than for the Electrical Committee to insist that nothing be admitted which is at all open to the objection of being less safe.

The first sign of weakening of the NATIONAL ELECTRICAL CODE will be the signal for a new flood of State and local codes.

The Turned-In Set Evil

The radio business in many ways is the funniest business that ever existed. Giving no heed to what had been demonstrated by others it has insisted in plowing ahead like a regular pioneer.

Not content with disregarding the findings of the phonograph industry with respect to tone reproducing devices the radio industry appears now to be disregarding the findings of the automobile industry on the turn-in proposition.

The used car is the fly-in-the-ointment of the automobile dealer. Every dealer will admit that if it were not for the used car taken in exchange that the business would be all right.

And now the radio dealers are advertising that they will take used sets in exchange. How much will they allow? To whom will they sell them? Will they sell these used sets as such or will they break them up and sell them as parts or will they change the hook-up to make them more modern?

There is not enough margin in the radio set to warrant giving any of it away in over allowance on turned in sets. Moreover, the used set taken in exchange must be sold and if the dealer wants to cover his overhead he must charge a profit.

If the dealer refuses to take any of the financial woe of the used-set business he will find that his allowance on what was once an expensive set is pretty small and he stands a chance then of developing the customer's ill will.

Any way you look at it, the used set proposition is full of trouble except one and that is to accept the used set for sale, the amount received in total or, if you wish to cover sale cost, less a certain percent to be applied to the customer's credit. As many of the expensive sets are being bought on

terms, the sale of the turned in set will be made undoubtedly long before the final payment is made.

A Dirty Trick

We have all heard of the accommodation order that a contractor gives a jobber for future delivery and how the jobber sometimes abuses this confidence by shipping ahead of time and then clamoring for his money; but the other day we heard of a new one.

A jobber tried to get such an accommodation order for a quantity of armored cable; but, not succeeding, he shipped the contractor a few thousand feet anyway.

The contractor did just what the jobber figured he would do. He called up the jobber who jollied him into accepting the shipment on the grounds that he didn't have to pay right away.

This is a fine way for a jobber to reduce his inventories, make room for incoming stock and get the customer to do one of the few things that a jobber is paid for doing—warehousing the material.

There is only one way to stop such impositions. Send the material back at the jobber's expense. Accept only that material which you have ordered.

Out of Sight Competition

We have heard of the carpet bagger and curbstoner competition—the work done by the unreliable, inefficient, fly-by-nights, and it is all that is said of it and more.

Let us not, however, be blind to another kind of competition that is on the ascendancy and is equally as vicious—the building electrician.

He is taking thousands of dollars away from legitimate electrical contractors and he is getting his materials from the jobber at the contractor's price.

Sometimes he's the janitor, sometimes the building handy man or mechanic and occasionally a trained electrician.

That large buildings require such men to be on the job in case of trouble or to prevent trouble is understandable; but they should be confined to such work and not permitted to make extensions and additions to the wiring system.

The work of contractors is inspected but not the work

of these men. The contractor stands back of his work but these men have no responsibility. They care not one whit how the work is done. Pride of workmanship is not theirs.

If electrical systems constitute a hazard and should be installed by electrical contractors only, they should also be extended by electrical contractors only. It is seldom that trouble comes from the original installation but rather from the wiring as altered by something that occurred after the original work.

Higher insurance premiums are not sufficient penalty to overcome this menace. Municipal regulations with stiff penalties for infringement, and reinspection, appear at present to be the remedy.

A Way to Lower Costs

Contractors who are looking for ways to save money should get back of the Model Ordinance which has been prepared by the Electrical Manufacturer's Council in consultation with the Association of Electragists. The important part of this Model Ordinance is that it insures the wiring being done in accordance with the National Electrical Code and that any revisions of the Code automatically become operative.

The manufacturers plan their production on the basis of Code requirements. Any city that operates on any other basis means that the manufacturers must make special equipment to meet such requirements. This naturally raises the cost of those products.

Contractors operating in cities with special ordinance requirements would find that they could save money on much of their material if their cities were to adopt the Model Ordinance. This paper will be glad to furnish copies upon request.

Bricks Without Straw

One of the tortures inflicted by Pharaoh on the Children of Israel was to require them to make bricks without straw. We seem to have a parallel in the contracting business.

At a recent meeting of electrical estimators the startling confession was made that, with few exceptions, other than where they were principals, estimators had no opportunity to learn what it costs to make the installations they figure.

Can it be that employing electrical contractors do not permit, yes even insist, that their estimators know their costs?

How in the name of common sense is an estimator going to work if he isn't fully equipped with the only tool that he is supposed to use—cost data?

Perhaps the above confession is one of the reasons why electrical bids so often are so ridiculously low.

Contractors should require that their estimators know their costs and, besides that they should do all that they can to gather costs and make them public.

We are never going to be able to make competitive business profitable without the extras, until there is a reasonable

understanding throughout the trade of what installation work actually costs.

Many an estimator today is figuring work involving thousands of dollars, using as a basis data collected five to ten or more years ago. True he has made allowance for a higher wage rate but what allowance has he made or can he intelligently make for efficiency, if he hasn't current guiding data?

With the meagre amount of cost data on electrical construction that is used by many estimators there is little wonder that the profit so often lies in the extras.

Start Farm Wiring Right

In a number of states experiments are being conducted to determine the extent to which electricity can be applied to farm work. Already the results are startling for just as electricity has proven its economic advantages in the factory and office so it is proving itself an efficient tool of the farmer.

A new business, therefore, is opening up for the contractor, that of farm wiring, and it is essential that he approach it in an orderly manner.

First of all, electricity offers the farmer an added safety from fire; but it is necessary that the contractor make this safety as near one hundred percent as possible. The farmer is almost without fire protection and so needs the safest kind of installation.

Secondly, the farmer is instinctively a tinkerer. Contractors, therefore, are charged with the responsibility of setting him an example of the finest kind of a job so that if he does make any additions they will be done carefully and safely.

All of which means that All-Metal is the best for the farm. It costs no more, if as much, but it gives added safety.

Thirdly, farm wiring is different from house wiring in that considerable attention must be given to the wiring layout. The center of distribution must be so located that conductor cost may be kept to a minimum. The selection of proper wire sizes and the fusing for maximum convenience and accessibility will also require attention.

Finally, do not skimp. Remember that electricity on the farm is in its infancy and that succeeding years will bring a growing number of farm uses. Be generous, therefore, in providing additional capacity in feeders and service panel.

Red Seal

The Red Seal plan does not seem to be making the progress that the idea warrants. To date but one city has developed a satisfactory minimum standard of adequacy. Where are the others? What is the cause of all this inertia?

Here is one of the most constructive plans ever proposed to give character to electric wiring. It should go over big and we urge the contractors, who are the chief beneficiaries, to sponsor the movement in their town and get every one interested.

The Red Seal is more than a symbol of adequacy. It is the symbol of prosperity amongst housewiring contractors.

Association of Electragists INTERNATIONAL

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SECRETARY AND TREASURER, Laurence W. Davis,
15 West 37th Street, New York City.

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E. McCleary1903-1905	*Marshall L. Barnes.....1910-1912	Robley S. Stearnes.....1916-1918
James R. Strong.....1905-1908	Ernest Freeman.....1912-1914	W. Creighton Peet.....1918-1920

*Deceased

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Los Angeles (C)	Helen I. Mikesell	1009 1/2 S. Hill St.			
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			WASHINGTON		
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			Winnipeg (C)	Sydney F. Ricketts	76 Lombard Street

(C) designates exclusively Contractor-Dealer organization.
(L) designates an Electrical League.

FEBRUARY ACTIVITIES

Planning for Single State Electragist Body in California

A single state association, to be known as the "California Electragists" and including in its membership electrical contractor-dealers in both Northern and Southern California will be the outcome of a meeting of contractor-dealers held in Los Angeles Feb. 11. The meeting took place on the occasion of the visit of Laurence W. Davis, general manager of the Association of Electragists, International, who urged the advantages of having only one state body in California.

According to the arrangements made at the meeting the contractor-dealers of the southern part of the state will affiliate with the northern association, already known as the California Electragists and will automatically become, thereby, members of the A. E. I. The new state association will have two district offices, one in Los Angeles and the other in San Francisco.

Over 100 contractor-dealers were present at the Los Angeles meeting, representing not only that city but practically all of the principal towns throughout Southern California. A temporary organization was formed with H. H. Walker as president and arrangements were made for an executive board of representatives from each of the local associations throughout the territory. This executive board was instructed, with power to act, to take up with the committee from the present California Electragists the details of the amalgamation.

The meeting was attended by representatives of all of the jobbers and by W. L. Frost of the Southern California Edison Company, representing the California Electrical Bureau, the permanent organization which has grown out of the old California Electrical Cooperative Campaign. One of the speakers was E. McCleary of Detroit, A. E. I. executive committeeman from the Great Lakes Division, whose remarks struck a popular chord with all present.

Plans for the new association provide

for an executive committee to be composed of an equal number each from the Southern and Northern Districts, selected from the executive board of each district. This committee will meet quarterly or semi-annually and will select the chairman of the state organization for the coming year at their first meeting each year. The committee will prepare budgets for both the districts, and determine the distribution of activities and expenses based upon these budgets. Each district however will reserve the right to undertake and finance special work within its district in addition to that covered by regular State dues.

There is to be a field secretary at each district office and whatever office assistance is deemed necessary.

Another detail agreed upon is that the A. E. I. will accept no members in either district unless the applicant comes through the state association.

Members of the present California Electragists, which until now has included only the northern part of the state, have expressed themselves as highly pleased with the new arrangements, stating that one solid association within the state boundaries can do much for the welfare of the contractor-dealer industry in California.

Dealers Abandon Fixture Market Idea

The Lighting Fixture Dealers Association of America has rescinded its decision, announced last month, to hold a lighting fixture market in conjunction with its annual convention. The dealer organization had announced its plans for sponsoring the market after the National Council of Lighting Fixture Manufacturers decided it would discontinue its custom of holding the fixture show.

Since then a plan of cooperation between the two organizations has been devised. According to this new plan the dealers will not attempt to conduct a market this year, but in January,

1926, a lighting equipment market will be opened under the joint auspices of the manufacturers and the dealers and the Glassware Guild.

The dealers' convention which was to be held in March has been postponed and in its place there will be a joint convention of dealers, fixture manufacturers and glassware producers early next summer, the date and the place of the meeting to be announced later.

At this joint convention the plans for the 1926 lighting equipment market will be perfected, and with at least six months for preparation, according to statements issued by the cooperating bodies, a market will be held which will exceed in number and value of exhibits anything previously attempted in this line.

Missouri State Association Favors White Conduit

A resolution favoring the stocking only of white conduit and fittings to the exclusion of all other types was adopted at the semi-annual meeting of the Missouri State Association of Electrical Contractors and Dealers held in St. Louis, Jan. 31. Manufacturers, jobbers and dealers will be requested to cooperate in bringing about this ideal.

The meeting was presided over by A. J. Dunbar while G. E. Haarhaus acted as secretary. After formal business was disposed of, the meeting was thrown open to members for general discussion of contractors' problems. Laurence W. Davis, general manager of the A. E. I., and A. Penn Denton, executive committeeman of the national association, took an active part.

In addition to the resolution on conduit another was adopted opposing any change in the wiring code that would permit the use of twin wires and cables for interior wiring unless enclosed in conduit or metal armor.

An organization committee was authorized to provide for two members from Kansas City, two from St. Louis, one from Joplin and one from Springfield, to cooperate in bringing about greater interest in the state association.

Numerous Code Revisions Suggested at Electrical Committee Meeting

NUMEROUS changes, none of them of a very drastic nature, will appear in the 1925 National Electrical Code as the result of the meeting of the Electrical Committee of the National Fire Protection Association, held in New York City, Feb. 17, 18 and 19. This Committee now consists of 39 formal representatives and 18 alternates. Thirty-five of the formal representatives were in attendance at all the meetings and there were also a large number of the alternates there.

Among the most important actions taken by the meeting was the adoption of resolutions regarding the use of assemblies of twin and multiple conductors without metallic cover. The resolution covering this point is printed in full in the box on this page. Other action taken was as follows:

Article 1—Definition. The Committee had no changes to make.

Article 2—General. The Committee reported on requirements for soldering lugs. Rule 206-C now requires soldered lugs, or solderless connectors for current above 30 amperes. Rule 203-A requires soldered lugs or solderless connectors for wires having a current capacity greater than No. 8. The latter requirement is also repeated in Rule 611-D. No. 8 has a carrying capacity of 35, 40 or 50 amperes according to the installation of the wire, and No. 6, the next larger size, has a capacity of 50, 60 or 70 amperes. This discrepancy will be eliminated.

Under Rule 206 the previous report of the Committee as to identified terminals will become effective April 1st.

Article 3—Outside Work. The Committee's report was adopted, containing a number of editorial changes and covering the location of transmission lines in reference to buildings with definite rules for voltages in three classes. First, 0 to 7,500; second, 7,500 to 15,000; third, 15,000 and over. The present rule 304-E covers only full lines of over 5,000 v.

Same as above. The old rule did not permit lines of 5,000 v. or over to be above buildings. Under the new rule, lines up to 7,500 v. can be over a building if 8 ft. above it. Above 7,500 v. must not be over a building. Lines of

7,500 to 15,000 v. must be 8 ft. to one side. Lines of 15,000 v. and over must be 10 ft. to one side.

Article 4—Services. The Committee reported a number of editorial improvements with little change in sense. They recognized the possible use of circuit breakers of special approved type as allowable in place of service fuses. No suitable type has yet been developed by the manufacturers.

Resolutions Adopted by Electrical Committee, N. F. P. A.

"It is the sense of the Electrical Committee that:

"1. Assemblies of twin and multiple conductors without metallic covering, when the wires with their protective covering are approved by Underwriter's Laboratories, may be safely used when installed under specific limitations.

"2. The draft of rules covering the use of approved assemblies of twin and multiple conductors be referred to the Committee on Article 5, with instructions to cooperate with Underwriters Laboratories and present to the next regular meeting of the Electrical Committee rules covering the proper use of such approved assemblies."

Editor's Note.—This action does not approve the use of such conductors under any conditions during the next year and any change in rules permitting their use under specific limitations will depend on action of the Electrical Committee in February, 1926.

Article 5—Wiring Methods. The report of the Committee on requirements for a 3-wire, single phase system derived from auto-transformers was referred back to the Committee. This has to do with questions of the details of grounding.

Article 6—Conductors. The Committee proposed a number of editorial changes which were accepted. A new type of portable cord having 1/64-in. rubber insulation in parallel conductors was approved. This should do away

with the sale and use of a number of types of such cord which do not comply with the present rule. One-sixty-fourth inch rubber on the individual conductors under the rubber jacket for Type "T" cord, size No. 18 only was approved. This brings back into use a material which was abandoned three or four years ago. The Committee recommended a statement to appear in Section 603 stating how the polarity identification of portable cords may be secured if this is desired, but this identification will not be required.

Under Article 14 a change will be provided, and if polarity identification is furnished for portable cords, the identified wire shall be attached to the proved shell of a socket.

Article 7—Outlet Boxes and Cabinets. The Committee made only minor editorial changes.

Article 8—Rules 808-809. Some editorial revision was made but little or no change was made in the requirements of these two sections.

Rule 807, section B now states that under certain specified conditions single pole fusing of branch circuits may be employed by permission of the inspection department. The new text will state that single pole fusing may be employed, unless the inspection department decides that this cannot be done on account of certain conditions not being fulfilled.

Rule 805 is revised to require the exposed current carrying parts of cutout bases and fuse switches to be enclosed in cabinets or cutout boxes, or so designed or located that live metal parts shall not be exposed to accidental contact.

In various chapters additional provisions were made to safeguard against dusty places, inflammable vapors and gases. All such sections are changed to practically uniform wording, requiring that oil emerged switches shall be duct type, and the enclosure of other types of switches, fuses and similar apparatus in cabinets. A substantial editorial revision was made on the entire Article 8.

Article 9—Grounding. The Committee report made editorial changes in many places. The rules will permit the use of standard weight galvanized pipe for equipment grounding in place of copper wire. The rule will permit the use of copper or any other metal which will not corrode under the existing con-

ditions, and the allowable sizes of pipe will be given. The size will depend upon the capacity of the nearest cutout. An important new rule is that when copper conductors are used to ground the circuit wires and are installed in pipe and bonded to both ends of the pipe the copper may be bare.

No material changes were adopted in Articles 10, 11, 12 and 13.

A recommendation was adopted that after September 1st, 1926, all single pole "T" sockets should have the switch in the center contact.

More detail is given on polarity wiring of fixtures. The Committee declined to recommend that fixtures be grounded to the grounded circuit wire. Rule 1403-A, a requirement that the metal of fixtures be grounded, is made much more extensive. The rule will be made more specific and broader, the actual text not being yet determined but still in the hands of a sub-committee.

Article 15. It will not be required that a switch controlling a range shall be in sight of the range, but there must be a switch in the circuit.

Under the *Radio* section only slight changes are made in the rules, except that all wet batteries, that is storage batteries, must be used with a fuse not to exceed 15 amp. located preferably at or near the battery.

Article 38. No changes.

Article 39 — Theatres. In Rule 3901-C, a slight change is made in the wording to make the rule comply more nearly with standard practice. Emergency lights will be lights in lobbies, etc., which are necessary to proper illumination and which must normally be used during the performance.

Article 40 — Isolated Plants. The Committee considered it desirable that erectors should be required on farm plant lines which are 250 feet long or over, but this was referred back to the Committee.

Article 50. A new provision will be included recognizing the use of static condensers at voltages of 2,200 and 4,400. Also there will be specific rules for the entrance of high tension services to buildings other than central stations, sub-stations, etc. A disconnecting switch will be required ahead of every automatic overload perfection device. The manner of fusing automatic overload perfection is specific.

Article 60—Signal Systems. Only

one minor change was made, making Rule 6003-E apply to D-C wiring on municipal fire alarm switchboards.

Before these changes in the Code can become effective they must go through new channels. Previously the action of the Electrical Committee was prepared in the form of a preprint and submitted to the annual meeting of the National Fire Protection Association held the following summer, and the new Code became effective after this preprint had been revised and adopted at this meeting. Under the new arrangement the annual convention will refer those changes it ratifies to the American Engineering Standards Committee, which will then submit them by mail ballot to its members. The Code as thus passed will become an American standard.

Electragist Heads San Francisco League

C. B. Kenney, known more familiarly to the industry as "Cap" Kenney, has been elected president of the San Francisco Electrical Development League. Mr. Kenney, who is manager for the NePage-McKenny Company, electrical contractors, has long been active in local, state and national Electragist activities.

The San Francisco league is one of the largest in the country. It is made up of representatives of all branches of the electrical industry and the membership now totals 700 with an average weekly attendance at meetings of around 250.

Lehigh Valley Elects Officers

At a meeting of the Lehigh Valley Electrical Association, held at Allentown, Pa., Jan. 29, the following officers were elected to serve during 1925: president, E. W. Weaver, Allentown; vice president, Frederick K. Fogel, Allentown; treasurer, O. S. Mertz, Easton; secretary, Arthur W. Hill, Bethlehem.

New Milwaukee Secretary

The duties of the office of secretary of the Electrical Contractor-Dealers' Association of Milwaukee have been assumed by R. H. Grobe. Mr. Grobe takes the place of Walter F. Baumann, who has resigned on account of illness.

Charlotte (N. C.) Association Revived

The local association of electragists in Charlotte, N. C., was revived at a meeting held there Feb. 12, which was attended by eighteen contractor-dealers. Two more meetings of the local are planned before April 9, when a meeting of the state association is to be held in Charlotte.

One of the important moves was the writing of a letter to the North Carolina Corporation Commission, the state body controlling public utilities, explaining the attitude of the Southern Public Utilities Company, operating in North Carolina, which the letter said, merchandises at less than list prices.

The letter read in part as follows: "This practice can be illustrated by an actual case. A gentleman from Gastonia, which city is not served directly by the Southern Public Utilities Company, was quoted a price of \$151.70 on a Hot Point full automatic electric range, which has a list price of \$222.50. This gentleman then approached an established electrical dealer in the city of Charlotte and offered to pay them the same price as quoted by the Southern Public Utilities Company. The dealer then secured a quotation from the Edison Electric Appliance Company at Atlanta of \$151.70, the net cost to the dealer. It might be mentioned also that the Southern Public Utilities Company offered an additional 5 percent for cash. The dealer then called the utilities company and was quoted \$165. . . .

"Incidentally they advertise Mazda lamps, which regularly sell at 27 cents at 25 cents and 32-cent lamps at 30 cents. Under the consignment agreement which dealers have with the lamp manufacturers they are not allowed to deviate from the manufacturer's price. . . .

"As we understand the franchise granted public utilities they are given an opportunity to conduct their business free from competition and are permitted to charge rates which net them a satisfactory return on their investment. It therefore appears to us that in the instance cited above the Southern Public Utilities Company is abusing that privilege by making up their losses in the merchandising department through the sale of power at a profit. They are also affecting the business of licensed electrical dealers who pay city and state taxes and do not have the protection afforded public utility companies."

North Carolinians Urge State Licensing

Among the outstanding features of the annual convention of the North Carolina Association of Electragists, held at Winston-Salem, Feb. 2, was the appointment of a special legislative committee to work for the passage of state legislation for rigid examination of all desiring to enter the electrical contracting profession.

As announced by President N. L. Walker of Raleigh the specific object of the conference was to devise means of bringing about:

1—A change in the attitude of many state and local officials in permitting any one to engage in the electrical contracting business whether qualified or not.

2—A change in the attitude of manufacturers and jobbers in selling direct, quoting consumers dealers' prices, granting courtesy discounts, quoting trade prices to those not recognized or licensed as legitimate contractors or dealers, having no definite sales policy, neglecting to recognize the need of sufficient margins on appliances, etc.

3—A change in the attitude of many contractor-dealers themselves in neglecting proper estimating methods, figuring overhead, and studying the fundamentals of our business.

Discussion of the first section of the president's report resulted in the appointment of a special legislative committee to study legislation now before the legislature and to work for the passage of legislation making it necessary for all desiring to enter the profession to pass a rigid examination.

The second problem was discussed from many angles and a Trade Policy Committee was also appointed with F. C. Davis, Greensboro, chairman, to whom all complaints, misunderstandings and plans for cooperation should be referred when they affect contractor-dealers in their relations with manufacturers, jobbers or central stations.

In this same connection the practice of central stations in selling lamps below manufacturers' prices, cutting prices on appliances, etc., was severely condemned.

The solution to the third problem was pointed out by Arthur P. Peterson, Field Representative of the International Association, in an address in which he emphasized the need of individual attention to accurate estimating methods.

A resolution reaffirmed the stand of

electragists in handling only such merchandise, material and devices as was approved by the National Board of Fire Underwriters.

It was felt by everyone present that the only sound course to follow was to affiliate with the International Association requiring every member to be an electragist in order that the state organization might have the united support of electragists throughout the country. Accordingly a constitution and set of By-Laws was adopted requiring joint membership and also centering power in an executive committee of five.

N. L. Walker, Raleigh, was elected president; W. P. Christian, Greensboro, vice president; F. E. Robinson, Charlotte, secretary; J. M. Woodse, Charlotte, treasurer; and R. H. Wilton, Greensboro, as the fifth executive committeeman.

The next quarterly meeting will be held at Charlotte, April 9th, at which time an attendance of 150 is expected.

A. E. I. Has Representative at Distribution Conference

The electrical contractor-dealer industry was represented at the recent Washington conference on distribution, held by the United States Chamber of Commerce, by James R. Strong, president of the Association of Electragists, International.

Mr. Strong stated upon his return that he had found a very earnest conference, working to reduce waste in distribution and that he felt good results should accrue from the movement of which this meeting was only a beginning.

Registration Reduces Number of Los Angeles Contractors

The registration law, which became effective in Los Angeles September 1 last, has considerably reduced the number of electrical contractors doing business in that city, according to figures supplied by the Los Angeles Association of Electrical Contractors and Dealers. The law requires a registration fee of \$100 and the deposit of a bond of \$1,000 before an electrical contractor can install any work.

At the same time this ordinance went into effect there were 892 electrical contractors in the city. On February 1, this

had been cut down to 431 and this number is expected to be much further reduced when the city puts into effect the third provision of the registration law. This requires an examination as well as the fee and bond for new contractors.

The Los Angeles association has undertaken a new work which operates for the benefit of the smaller contractor who is not in a position to join the association at the moment. A series of community meetings is being carried on for the contractor who does not belong to an organization. The meetings are conducted by Burt E. Fanning and have been so well attended that an extension of the plan is being considered.

Mr. Fanning is now organizing a committee of ten members of the association, each one living in a different community center of Los Angeles. Each of these men will be responsible for conducting a weekly meeting of unorganized contractors in his district.

San Francisco Holds Annual Banquet

The annual banquet of the Electrical Contractors and Dealers Association of San Francisco, was held on the roof garden of the Hotel Whitcomb, that city, on Jan. 17, with nearly three hundred guests, representative of all branches of the industry, in attendance. Most unusual lighting and decorative effects and a specially arranged program of music and entertainment were provided by the entertainment committee, composed of Victor Lemoge, chairman, Gus Barocca, Dave Carlson and Ed Dowd.

A special feature of the evening was the drawing of prizes for the ladies. Each was presented with a numbered ticket, the duplicate of which was deposited in a box, and at the appointed time drawings were made. Twenty merchandise orders on San Francisco firms were distributed to the winners.

Edward Martin, president, was presented with a special token of appreciation of his untiring services and sincere efforts during the past year.

Boston Electrical Credit Men Elect

The Boston Electrical Dealers Credit Association, at its annual meeting, elected S. S. Epstein, president, succeeding Harry Arvedon. George B. Meltzer was elected vice president to succeed Mr. Epstein.

Edison Lighting Institute Opened



Above—The Main Exhibit

Here is shown auditorium lighting. In the front, stage and both color and high intensity window lighting are shown and in the rooms on the side window lighting.

Below—Industrial Demonstration

Besides showing the different units at different heights and spacings, the exhibit has the unusual feature of changeable wall colors to show the effects of different tints.



A most complete exhibit and demonstration quarters for lighting was opened by the Edison Lamps Works on Feb. 12 at its factory, Harrison, N. J., under the name of "Edison Lighting Institute." Located but a few minutes from New York, it is expected that this laboratory will bring a complete visualization of light usage to more people than could be the case elsewhere because of the great numbers of people who come to New York each year.

In the institute are demonstrated with suitable surroundings all known forms of the commercial application of light, including the home, store, factory, auditorium, stage, street, automobile, decorative, surgical, etc.

With it is combined a museum of past and present lamps, products and parts.

The Edison Lighting Institute has as its purpose the advancement of the art and practice of lighting and in this capacity it will function as an experimental laboratory, demonstration room, school of merchandising practice and show window for the industry.

It is open to all in the electrical industry who wish to study any particular lighting problem or who wish help and guidance.

The Edison Lighting Institute has a definite function in the electrical indus-

try. It is a laboratory of the use of light—a laboratory that begins where the Research Laboratories leave off. Its educational uses are unlimited for it is a complete visualization of the encyclopaedia of lighting.

It concentrates and makes concrete the best of modern lighting practices. It serves as a bureau of standards for test and demonstration. And it gives the manufacturer, the distributor and the service engineer both inspiration and facts which enable them to increase the value of their service.

Its usefulness extends far beyond the electrical industry. It will be at the service of women's clubs, merchants' associations, manufacturers' associations, business clubs, chambers of commerce, electrical societies, schools and colleges. It is open to all who are interested in lighting in any of its phases.

New Local Association in the South

At a meeting held Feb. 9, the Columbia, (S. C.) Association of Electragists was formed with C. C. Weir acting as chairman and N. J. Powers as secretary. The meeting was addressed by Arthur P. Peterson, field man for the A. E. I., on the value of organization, local, state

and national. The contractors also were told by W. M. Perry, of the Perry-Mann Electric Supply Company, how the visit of W. H. Morton, then field man for the National Electrical Contractors Association proved the turning point in his business, since before then he had rarely given a thought to overhead.

From there Mr. Peterson went to Augusta, Ga., to aid in the formation of a local association of contractor-dealers there.

Sacramento Meeting Ratifies Affiliation Agreement

The most important action taken at the quarterly meeting of the California Electragists, held at Sacramento, Feb. 14, was the ratification of a tentative agreement whereby the contractors and dealers of Southern California will affiliate with the state electragist organization. The details of this merger are given elsewhere in this issue.

An executive meeting preceded the general open meeting of the body. The executive committee discussed mainly the various points of the tie-in with the Southern California section of the industry and a committee was appointed by President Lemoge to confer with representatives of that section. It is understood that the plan of affiliation will be put into effect as quickly as possible.

It was also decided at this meeting to query the members on the advisability of holding the annual convention in the fall at Eureka instead of at Santa Cruz.

The regular quarterly meeting took place in the afternoon. First on the program was Clyde Chamblin, an executive committeeman of the A. E. I., who read a paper on the Pacific Coast Electrical Data Book. He was followed by Earl Browne with a talk on the system of operating the local association in San Francisco. Mr. Browne also submitted the report of the code committee, of which he is chairman, and advised all members to give their support to the Association of Electrical Inspectors in the work of bringing about a unification of wiring regulations throughout the state.

C. B. Kenney gave a brief talk on "Credits" and was followed by Laurence W. Davis, general manager of the A. E. I., who in the course of an address on association work stressed the value of proper accounting.

Most of the San Francisco members of the association made the trip aboard the Steamer Navajo.

Code Discussions Feature Western Inspectors' Convention

The matter of rules to fit special types of installations was one of the subjects that came to the front continually during the twentieth annual convention of the Western Association of Electrical Inspectors, held at Louisville, January 27 to 29.

A recommendation was made in a report on public safety, submitted by E. O. Evertz, Columbus, O., that all live metal parts of a wiring system be inclosed.

On account of recent disastrous accidents in public buildings it was recommended that a compulsory rule be adopted requiring adequate exit lights in all buildings for transients.

A lively discussion took place on the report of the committee to investigate branch-circuit fuses, presented by William P. Briggs, New Bedford, Mass., no final disposition of the matter being made.

A. McLachlan, secretary Square "D" Company, Detroit, made an address on safe electrical installations that aroused much interest. A recommendation was made that service fuses be made inaccessible to users when in conjunction with a sealed service switch.

Thursday morning's program was devoted principally to discussion of the state electrical code, which was dealt with from the viewpoint of the state by John A. Hoeveler, electrical engineer with the Industrial Commission at Madison, who maintained that the state code should go more into safety measures than the National Electrical Code. Conditions have been greatly improved by the examination and licensing of electricians by cities and towns, but sub-standard work is still done in outside districts.

On Thursday afternoon the report of the committee on the National Electrical Code, read by K. W. Adkins, evoked lively discussion covering the prohibition of use of wood molding and a detailed investigation of metal-armored cable.

Proposed rules for use in architects' specifications included one to make it mandatory for open runs of wires and conductors to be in rigid metal conduit and one for use in determining the size of mains, namely: Residential, 6 amp. at 110 volts, 3 amp. at 220 volts; all other lighting circuits, 10 amp. at 110

volts, 5 amp. at 220 volts. The committee recommended also that the rules should be changed to require rigid metal conduit for signs from the cabinet to the interior of the sign.

Officers elected were: President, John A. Hoeveler, Madison, Wis.; first vice-president, James S. Mahan, Chicago; second vice-president, John W. Kelly, Jr., Camden, N. J.; secretary and treasurer, W. S. Boyd, Chicago.

Standardized Lighting Proposed in Colorado

A bill providing for satisfactory natural and artificial lighting in places of work, education and amusement, has been introduced in the Colorado State Legislature due to the efforts of the Electrical Cooperative League of Denver. The bill, known as H. B. 404, is now in the hands of the Committee on Public Buildings and a number of legislators have expressed themselves in favor of such a measure.

Conference of New England Electrical Interests

A conference of the electrical interests of New England with the Western New England Association and the Eastern Association of Electrical Inspectors was being held on Feb. 23, at Hartford, Conn., as this issue went to press. The most important matter on the program was the disbanding of the Western New England Association of Electrical Inspectors and the organization of the Eastern Association of Electrical Inspectors. Scheduled to follow this subject was a symposium on "Electrical Codes Which Disagree," which was to be discussed by prominent speakers among them the Hon. John H. Trumbull, Governor of Connecticut and president of the Trumbull Manufacturing Company. A full report of the meeting will be printed in the April ELECTRICIST. Printed copies of the winter meeting proceedings can be obtained from the secretary.

Wisconsin Association Would Have State Licensing

Wisconsin electricians and electrical contractors will be required to have a state license in the future if the state legislature passes the bill which will be presented soon by the Wisconsin State Association of Electrical Contractors and Dealers.

The association, in session at the Hotel Pfister, Milwaukee, January 28, 29 and 30, approved a bill which if it becomes a law will require electricians to have a state license and contractors to have a permit. If the contractor cannot obtain a Master Electrician's license he must have such a man in his employ. The bill as passed by the convention is similar to that which governs plumbers in that state.

The proposed law would prevent many state contractors from employing high school boys to do electrical wiring, a condition which members of the association have declared causes considerable loss of property every year. The licensing of contractors would prevent tramp electricians from going from town to town wiring houses and installing machinery which will later have to be reinstalled.

The meeting was attended by about 150 contractors and dealers from all

parts of the state and was considered the most spirited and successful meeting yet held.

Addresses were given by L. W. Burch, Madison, chairman of the meeting; L. G. Ross, Superior; by B. L. Burdick, Milwaukee, on "Electrical Contracting Resources and Ways"; and by R. J. Nickles, Madison, on "Establishing Policies for Strengthening our Association," each address being followed by a general discussion.

L. W. Davis, general manager of the A. E. I., made an address on "Will You Make Your Business Profitable?" He urged electrical contractors to discard the usually unprofitable practice of contracting for jobs where highly competitive conditions exist. He touched also on the turnover of the electrical supply business compared with other businesses and appealed for full cooperation from electrical contractors in sending in their selling and buying experiences to be used for purposes of study and disseminated for general benefit. He condemned sessions behind closed doors.

L. W. Burch was elected as president and will serve also as secretary pending the selection of a paid secretary. L. J. Acker, Sheboygan, was made treasurer.

Davis Returns From Trans-continental Trip

A very enthusiastic report on electragist activities in the middle west and in California was made by Laurence W. Davis, general manager of the A. E. I., who returned Feb. 20 from a trip which took in Chicago, Milwaukee, St. Louis, Kansas City, Wichita, Los Angeles, San Francisco and Denver. While in California Mr. Davis took an active part in the negotiations which will result in the affiliation of the electrical contractor-dealers of the Southern California territory with the California Electragists.

On his way out he attended the annual convention of the Wisconsin State Association of Electrical Contractors and Dealers. In Kansas City he held conferences with the jobbers and with the contractors, describing to the jobbers the way in which the Milwaukee jobbers are promoting the use of the A. E. I. Standard Accounting System. At an evening meeting of contractors there, he made a talk on estimating. At Wichita he talked before a meeting of the Electrical League at the Hotel Lassen. At St. Louis he addressed a meeting of 250 contractor-dealers, telling them of the work the A. E. I. is doing for the individual contractor.

After attending the first quarterly meeting of the California Electragists at Sacramento on Feb. 14, he returned east, stopping at Denver where he held an afternoon conference with the executives of the Electrical Contractors' Association and addressed a dinner meeting of the membership of the association at the Auditorium Hotel in the evening.

Rhode Island League Elects Executive Committee

Of the total attendance of 89 at the annual meeting of the Rhode Island Electrical League, held at the Turks Head Club, Providence, R. I., on Friday night, Jan. 30th, fifteen represented the jobbing interests, 32 the contractors, dealers and fixture houses and 42 the central stations. The executive committee for the coming year was elected at this meeting, and a short talk was given by F. C. Eteson, vice-chairman of the New England Lighting Bureau explaining the illumination school held Feb. 10, 11 and 12 in the demonstration room of the Roger Building at Massachusetts Institute of Technology. An-

other speaker was Henry W. Ballou of Jenks & Ballou, engineers in charge of the work on the new generating plant of the Narragansett Electric Lighting Company.

Kansas City Holding Electrical Show

Final plans for the electrical and radio show, being held by the Kansas City Electrical Club, March 2-7, were announced as this issue went to press. The large Convention Hall in Kansas City has been obtained for the show and eighty exhibit spaces have been prepared on the main floor.

Radio is to be given a large part in the exhibit and a number of unusual broadcasting stunts have been planned to enlist public interest.

Sam Furst, who directed the 1921 electrical show given by the club, has again been placed in charge of show activities. He is assisted by Leo Fitzpatrick, C. F. Farley and Joseph Porter, Jr.

Hearing on Fire Alarm Systems

The committee on signaling systems of the National Fire Protection Association will hold a public hearing on proposed revisions of the regulations on municipal fire alarm systems and on signaling systems on March 17, at 18 Oliver Street, Boston. The report of the committee, giving the proposed changes, is now being distributed by the executive offices of the association.

OBITUARIES

Mrs. Hattie Sechrist

A noted figure in the electrical industry of the west was lost in the recent death of Mrs. Hattie Sechrist, president of the Albert Sechrist Manufacturing Company, of Denver, Colo. Mrs. Sechrist, since the death of her husband several years ago, has been the active head of the largest lighting fixture manufacturing company in the mountain region.

T. R. Warburton

T. R. Warburton, head of the Warburton Plumbing Company, died recently at his home in Jackson, Miss.

S. E. D. Annual Meeting

The annual meeting of the Society for Electrical Development was held at its general offices, 522 Fifth Avenue, New York, N. Y., on Feb. 3, 1925, with Vice President James R. Strong presiding. The following directors were elected for a term of four years each to represent their respective groups: Central Stations, John F. Gilchrist; manufacturers, George F. Morrison; jobbers, F. D. Van Winkle; contractor-dealers, G. Fred Laube.

Brock Heads Lexington Contractors

At its recent annual election of officers, the Association of Electrical Contractors and Dealers of Lexington, Ky., elected J. H. Brock to the presidency. Mr. Brock is proprietor of the Brock Electric Engineering Company.

News Notes Concerning Electrical Contractor-Dealers

Business Changes, Store Improvements and New Establishments Opened

Walter Coburn, Denver contractor-dealer, has incorporated his business, located at 50 Broadway, and it will hereafter be known as the C & M Electric Company.

The electrical business of E. L. Jenkins, Rensselaer, Ind., has been purchased by Cecil Shaw and R. E. McFarlane.

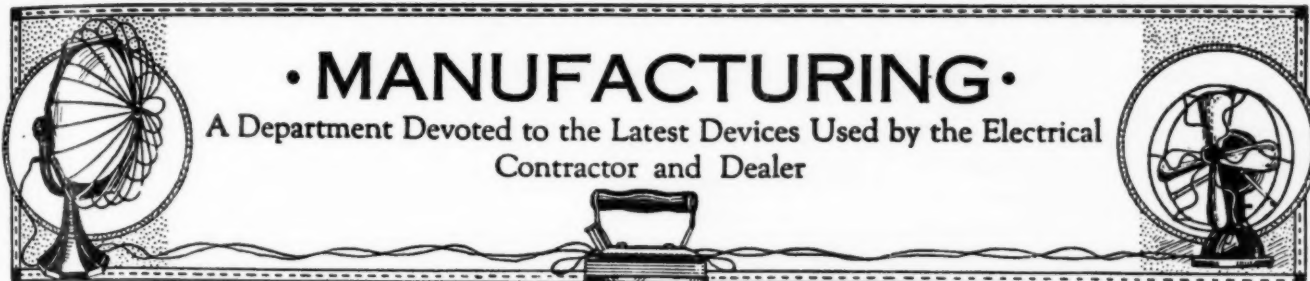
F. A. Rhoad and J. H. Lavo have bought out the A. H. Sacksteder electrical store, Tiffin, O., and will conduct the business under the firm name of the R. & L. Electric Company.

A new store has been opened at 1310 Twelfth Avenue, Altoona, Pa., by the J. E. Spence Electric Company.

The Burns Electric Company, Alton, Ill., has recently occupied new and larger quarters on College Avenue.

Earl E. Storrs has established an electric repair and service shop in Mt. Vernon, Wash.

William White, proprietor of the White Electric Company, Gouverneur, N. Y., has formed a partnership with Howard Fuller.



• MANUFACTURING •

A Department Devoted to the Latest Devices Used by the Electrical Contractor and Dealer

Shallow Canopy Switch

The Arrow Electric Company, Hartford, Conn., has placed on the market a new shallow canopy switch with a number of desirable features. The base is only 5-16 in. deep. The switch has a ratchet handle which cannot vibrate



loose or become lost, the installation can be made without removing the handle and the addition of a "glo-Tip" makes the device luminous. It is constructed with a bakelite base and comes with a stem 3-16, 5-16 or 7-16 in. long.

Socket for Gas Filled Lamps

A new brass socket is being marketed by the Pass & Seymour Company, Syracuse, N. Y., to meet the problem of the higher temperatures of the gas filled lamp. The device is termed a "super standard key socket" and has a high heat resisting key. The new key is made of special material widely known for high heat resisting qualities, perman-



ent durability and appearance. It is standard in either black or brown color, on "P&S Fluto" sockets. The company is also making a new 660 watt chain pull socket with a metal locating lug.

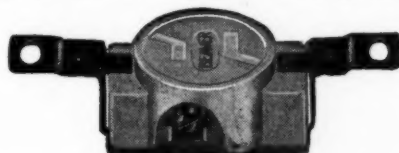
By adding this metal locating lug to all its porcelain socket bodies, with the single center screw, there is a saving of time for the wireman in assembling these wiring devices.

The metal lug on the body fits a cor-

responding depression in the caps and bases and indicates the position for assembling.

Flush Receptacle

The Beaver Machine & Tool Company, Inc., Newark, N. J., has brought out a new flush receptacle which is designed to accommodate both parallel



and tandem blades. The binding screws are well protected in accordance with the Underwriters' stipulations. The receptacle is made of gray porcelain, the gray pigment going through the porcelain, and the face of the device is finished in black enamel. Thus, if the device should be chipped, it would not be materially defaced due to the pigment permeating the porcelain completely. The device has a depth of only 3-4 inch.

Cord Set

The Waage Electric Company, 5100 West Ravenswood Avenue, Chicago, is now making an interchangeable single heat cord set under the name "Connect-all" which fits most makes of single

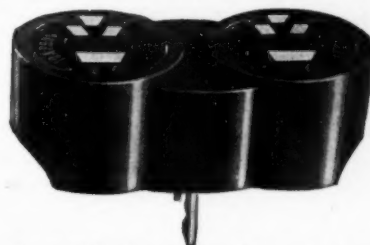


heat irons. The cord set is constructed of standard material throughout. Black and gold asbestos covered cord, complying with required specifications, is used. The cord sets are packed in attractive individual boxes.

Multiple Plug

A new multiple plug recently brought out by Harvey Hubbell, Inc., Bridge-

port, Conn., converts a single convenience outlet into a duplex. It has the advantage of being exceptionally small and neat, and of fitting snugly up against the outlet plate. The plug is



made of black composition, in tandem and parallel bladed types. It is packed ten on a card for counter display.

Window Reflector

The Wheeler Reflector Company, 275 Congress Street, Boston, Mass., has added a new window reflector to its line under the catalogue number, K-7. The reflector is constructed of porcelain enameled steel, finished in gray outside and white inside, drawn in one



piece. There are no parts to loosen or break. The white enamel, together with the shape of the reflector, assures proper distribution of light over the entire display. The enamel will not chip or peel under the most intense heat. The unit is designed for use with 75 and 100, 150 watt lamps. It is conveniently concealed as a light source, is simple to clean and easy to wire and install.

According to the manufacturer the reflector is made so sturdily that it will successfully withstand the roughest usage and should last for an indefinite period.

Automatic Door Device

An electrically operated device, manufactured by the Varnum Door Engine Company, Los Angeles, Cal., is intended for use in banking institutions for opening and closing the gates to the safe deposit vaults and for large residences where the gates to the grounds are ponderous and heavy. It formerly required considerable exertion to move these



heavy doors. Now, where it has been installed in banks it has eliminated the necessity of an employee constantly opening and closing the doors for customers.

The device operated by a 1-6 hp. Westinghouse motor not only furnishes the driving force but also stops the door at the proper point. Therefore, it is impossible for the doors or gates to slam either in the opening or closing action.

The motor unit is concealed and protected in an easily accessible cast iron box installed just below the floor level. In the swinging type the crank which accomplishes the opening and closing, fits into the under edge of the door or gate and is therefore out of sight.

Battery Charger

A new model two-ampere Tungar battery charger is now being sold by the General Electric Company. This charger is so compact that it can be placed in a radio cabinet and made a part of the set.

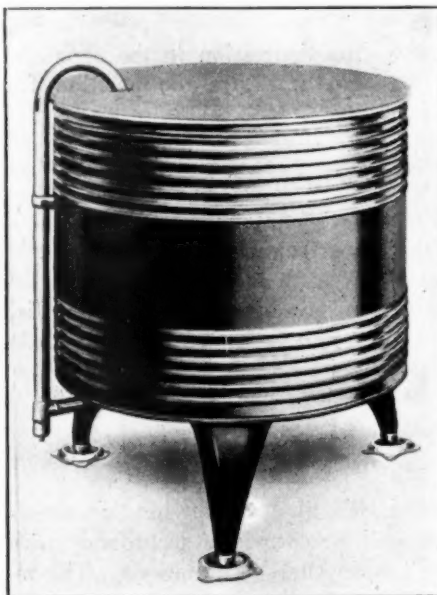
The new model may be used to recharge automobile batteries as well as all radio "A" and "B" storage batteries. A feature is a well marked terminal board on the outside of the casing, permitting the owner to charge different types of batteries merely by changing one connection.

The nine types of battery which may be charged with this unit are: six or

twelve volt automobile batteries; two or four volt radio "A" batteries; six volt radio "A" batteries, and 24, 48, 72 and 96 volt radio "B" batteries.

Washer

The George W. Dunham Corporation, Utica, N. Y., announce their new "Whirldry" washer as the first unit of



their line of electrical labor saving appliances. The washer is of the centrifugal drying type, washing, drying and rinsing operation taking place in the spinner basket and not in the main tub. The main washing unit is a nickel plated copper gyrator while the drying unit is a solid nickel plated copper basket without perforations in the bottom or sides. The washer also has a self emptying unit which drains the water to tub height.

Condensed Notes of Interest to the Trade

The condensed catalogue just issued by the Federal Porcelain Company, Carey, O., contains complete statistical data, including list prices, weights, barrel quantities, dimensions, wire carrying capacities, etc., on all the items of its standard porcelain, which are most commonly in demand.

A branch sales office and warehouse have been opened at 51 Federal Street, San Francisco, Cal., by the J. G. Pomeroy Company of Los Angeles, the California representative of the Columbia Metal Box Company.

The F. W. Wakefield Brass Company of Vermilion, Ohio, announces the completion of its new factory building which replaces the one destroyed by fire on the night of December 4th last.

A. F. Wakefield, for the past two years a vice president of the company, has been promoted to the position of general manager.

The plant of the A. A. Wire Company has been moved to larger quarters at Harrison, N. J., where increased equipment will provide ample facilities for handling the growing business of the company. All matters pertaining to distribution and sales will be handled at 110 East 42nd Street, New York.

In order to facilitate operations in the states of California, Utah, Nevada and Arizona, a new lighting company, "Curtis Lighting of California, Inc." has been formed.

The Beardslee Chandelier Manufacturing Company, 216 South Jefferson Street, Chicago, has just issued a new catalogue containing illustrations, descriptions and prices of between 400 and 500 chandeliers and brackets.

A new catalogue, showing its complete line, has just been issued by the Reflector & Illuminating Company, Chicago.

The Rome Wire Company has released the following statement:

"On December 23, 1924, letters patent No. 1520680 were granted Rome Wire Company on its new Non-metallic Armored Cable 'RomeX.' The Rome Wire Company believes that when the Underwriters approve of the use of 'RomeX' this wire is destined to fill an important place in the electrical wiring industry. Under the broad claims of the patent as issued the company feels it is now in a position to guarantee to the industry a high standard of quality of this product, not only as manufactured by it, but also by such other manufacturers as may be licensed to operate under the Rome patent."

The Circle F Manufacturing Company, successors to the E. H. Freeman Electric Company, Trenton, N. J., is distributing two booklets, one dealing with its "Circle F" radio equipment, the other with its wiring devices.